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LITHOGRAPHIC ABSTRACTS

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PHOTOGRAPHY, TONE AND COLOR CORRECTION

PERFORMANCE CHARACTERISTICS OF "CRONAR" POLYESTER PHOTOGRAPHIC FILM BASE. John M. Centa. Photogrammetric Engineering 21, No. 4, September, 1955, pp. 539-542 (4 pages). The laboratory and field test performance of "Cronar" photographic film base are discussed and data presented on stability coefficients, flexibility, strength and optical properties of this new base. All of these data suggest that "Cronar" base will offer handling and performance advantages of especial benefit to the field of photogrammetry.

CHECK EVERY STEP IN GOOD CAMERA WORK. E. J. W. Simmonds. Canadian Printer and Publisher 64, No. 9, September, 1955, pp. 69-71 (3 pages). The author, an instructor, lists 21 steps that should be taken every time a piece of copy is photographed. From checking the copy for size, spelling and marks to examining the final negative for faults the photographer has to be alert.

*"LAND"-TYPE COLOR PHOTOGRAPHS. E. H. Land. Brit. Patent 706,921. Monthly Abstract Bulletin 41, No. 7, July, 1955, pp. 361-362. Positive color images are formed when negative latent images are developed in an emulsion layer in which the color former has been uniformly distributed, the oxidizing agent having been incorporated in the image-carrying layer and the developer being in a container which breaks, upon pressure, to release the solution between the two layers. At the time of the release, this liquid is incapable of forming a dye, but, after permeating the negative layer, it is changed so that it can form a dye during an oxidation

reaction; the dye is, preferably, created by a reaction between the coupler and a secondary color-developer, i.e., one that, when oxidized, will react with the coupler to form a dye. Imagewise distribution of unreacted developer and coupler will result when the latent image is developed to silver and the dye image is formed; this distribution is transferred by imbibition from the emulsion layer to the receiving layer, which is so positioned that such a depthwise diffusion can occur without disturbing the components. Couplers are, preferably, those which will form azomethine, indaniline, or indophenol dyes in a reaction with an oxidized secondary color-developer, e.g., pyrazolones, nitriles, phenols, etc.; and secondary color-developers are - phenylenediamines, aminophenols, or their alkyl-substituted derivatives. Oxidizing agents suitable for incorporating by imbibition in the image-carrying layer are peroxy compounds, such as sodium or potassium perborate. Corresponds to U. S. Patent 2,559,643. (Monthly Abstract Bulletin 37, 540, 1951).

LOGETRONICS. D. R. Craig. Photogrammetric Engineering 21, No. 4, September, 1955, pp. 556-563 (8 pages). LogEtronics, the application of well known electronic concepts and components to the exposure of photosensitive materials now makes possible a photographic printer with provisions for completely automatic "dodging" and control of overall exposure level. Basic principles and system parameters of the LogEtronic CPIOS Contact Printer are described, accompanied by examples of comparative prints. The photographic effect of "dodging" is discussed to establish its role as the sole means for transferring maximum information from negative to print. A preliminary test of plotting precision with LogEtronic dispositive plates is reported. The importance of LogEtronics to both the user and producer of aerial photographs is stressed.

PLANOGRAPHIC PRINTING PROCESSES

*THE DIFFERENCE EFFECT ON ALUMINUM DISSOLVING IN HYDROFLUORIC AND HYDROCHLORIC ACIDS. M. E. Straumanis and Y. N. Wang. Electrochemical Society, Journal 102, June 1955, pp. 304-310. Battelle Technical Review 4, No. 9, September 1955, pp. 523a. Positive difference effect was observed during dissolution of high purity Al coupled with Pt in 0.05, 0.1, 0.25, 0.5, 0.75, 1.0, and 2.0 hydrofluoric acid at 25°C. The effect was directly proportional to the galvanic current up to 60 milliamp. per sq. cm., being nearly independent of the concentration of the acid. Tables, graphs, diagram. 22 ref.

*INFLUENCE OF SPECIMEN AREA ON THE PITTING PROBABILITY OF ALUMINUM. P. M. Aziz and Hugh P. Godard. Electrochemical Society, Journal 102, October 1955, pp. 577-579. Battelle Technical Review 4, No. 12, Dec. 1955, pp. 694a. Pit sites are not due to specific local macrodefects in the metal surface, but arise in a random fashion through the interaction of myriads of anodic and cathodic elements on the surface between which local action currents flow on initial immersion of the sample in the corrosive environment. Tables, graph. 7 ref.

THE ADHESION OF AMPHIPATHIC MOLECULES TO METAL SURFACES. R. B. Waterhouse and J. H. Schulman. Journal of the Oil & Colour Chemists' Assn. 38, No. 10, October, 1955, pp. 646-654 (9 pages). Structure and adhesion of simple amphipathic molecules on copper, aluminum, and iron surfaces have been studied by contact-angle measurements, coefficient-of-friction changes on rubbing metal surfaces, and electron-diffraction measurements on the deposited films. It is found that the adsorption may be of three types, physical adsorption, chemi-sorption, and "precipitated" sorption. The last two types are highly selective both as to the nature of the polar groups in the adsorbing molecule and the type and availability of

the metal ions on the solid surface. The mechanical properties of these types of adsorbed film are very different.

*CONDUCTIVE COATING FOR ALUMINUM. John A. Connor and R. Stricklen. Electrical Manufacturing 55, June, 1955, pp. 105-107. Battelle Technical Review 4, No. 9, September, 1955, pp. 520a. Contact resistance and corrosion properties of Al components are improved by chromate surface conversion treatment applied by immersion at room temperature. Table, photographs, graphs.

PAPER AND INK

COATED PAPER PROPERTIES AND THEIR RELATION TO PRINTABILITY AND PRINT QUALITY IN LITHOGRAPHY. Robert F. Reed. TAPPI 38, No. 11, November, 1955, pp. 648-651 (4 pages). Printability is defined to mean the combined properties and condition of paper that affect its press performance. The properties involved are plasticity, curling tendency, pick strength, moisture resistance, moisture absorbency, surface ink absorbency, alkalinity, and tinting tendency. The conditions that affect press performance are flatness and freedom from dust, fibers, and foreign matter. Print quality is defined as the general appeal or attractiveness of the printed reproduction to the viewer. This attractiveness is largely subjective and involves realism in tone and color, contrast, smoothness or graininess of tones and solids, sharpness, and clarity of detail. These effects are to a certain extent interrelated and interdependent. In the absence of printability defects and foreign matter, the properties of coated papers that affect print quality are brightness, opacity or "show-through," smoothness, and refractiveness of the coating pigment. The newer ungrained zinc, aluminum, and bimetal plates have made possible improvements in print quality with less ink and moisture than is required by grained plates. But they have also increased certain paper require-

ments, namely, pick strength and moisture resistance. The increasing use of web offset presses printing at high speeds with smaller cylinders has increased the requirement for pick strength.

PAPER VARIATIONS. Ronald Drake. NATIONAL LITHOGRAPHER 62, No. 9, Sept. 1955, pp. 78-80 (3 pages). Four main problems connected with paper are discussed very briefly. These four problems are concerned with the following: (1) Printing quality (Surface effect); (2) Strength (Picking, splitting, tearing, folding, etc.); (3) Foreign material (Dust, lint, part sheets, extraneous material); (4) Relative humidity effects (Atmospheric--internal).

EFFECT OF SMOOTHNESS AND COMPRESSIBILITY ON THE PRINTING QUALITY OF COATED PAPER. Walter W. Roehr. TAPPI 38, No. 11, November, 1955, pp. 660-664 (5 pages). Among the characteristics of coated book paper which influence its printability are such properties as surface smoothness and compressibility. Several new techniques for evaluating these properties are described. An SA-2 Brush surface analyzer is used for making roughness determinations. The test strip is mounted on a rotating drum and its surface traced with a small diamond stylus, the vertical motion of which is magnified and recorded. An electronic counter has been devised which counts both the number of surface depressions as well as their average width. Depressions shallower than any predetermined depth are automatically excluded. A good estimate of the percent of total surface area falling below any given depth can be obtained in this manner. For compressibility measurements an apparatus has been constructed which will accurately measure the thickness of a piece of paper at any compressive force up to 1000 p.s.i. Several applications of these techniques to the study of surface roughness and compressibility as they affect printing quality are described. On coated book papers a good correlation is indicated between letterpress halftone prints and surface roughness values.

Compressibility appears to play only a minor role on heavily coated papers, but becomes increasingly more important at lower coat weights. Both smoothness and compressibility also have a pronounced effect on rotogravure printability, while offset lithography is the least critical in this respect.

DIMENSIONAL STABILITY IN PAPER. F. E. Masterman. TAPPI 38, No. 10, October, 1955, pp. 134-5A (2 pages). Bulletin of the Institute of Paper Chemistry 26, No. 3, November, 1955, pp. 203. The author briefly discusses the five principal reasons causing paper to stretch, shrink, curl, crease, etc. (any potential change which can take place in the size and shape of paper), i.e., moisture, temperature, roll stretch, ink tack, and excessive fountain water in lithography; methods for minimizing the effects of dimensional instability are outlined.

*AN INSTRUMENT FOR NUMERICAL MEASUREMENT OF BENDING QUALITY OF BOARDS. G. R. Donaldson. Australian Pulp & Paper Ind., Tech. Assoc. Proc. 8:237-47; discussion: 248-50 (1954). Bulletin of The Institute of Paper Chemistry 26, No. 3, November, 1955, pp. 177. A simple procedure has been developed for the numerical rating of the bending quality of board used for the manufacture of folding cartons. Samples are creased with standard numbered laboratory creasing dies. Each die in the series gives a crease with a shear angle 10° different from the next. The highest numbered die which enables the creased board to fold without the liner rupturing is the bending quality number. For accurate measurement of bending quality the dies must be accurately made; because a large number of dies is required to test boards of all thicknesses and bending qualities, they must be of low cost. 1 table, 3 figures, and 7 references.

*THE DRYING OF LETTERPRESS AND OFFSET INKS, TROUBLES ARISING THEREFROM AND THEIR CURE. Bull. Inform. Fed. Franc. Synd. Pair. Imprim. Ind.

Graph., No. 33, March, 1955, pp. 77-80; No. 34, April, 1955, pp. 107-9 (in French). Printing Abstracts 10, No. 9, September, 1955, pp. 510. The methods by which such inks dry, the factors affecting drying (pigments, thinners, paper, temperature, humidity, age of ink, damping water), the choice and amount of drier and drying defects (too rapid or too slow drying, powdering, crystallisation, set-off, sticking of sheets, drying of inks on one sheet and not on another, non-uniform drying on a sheet) are discussed.

*FIXED ACIDITY OF PAPER. R. Sève and J. Pouradier. Assoc. tech. ind. papetière, Bull. No. 4-5: 143-59 (1955) (In French; English and German summaries). Bulletin of the Institute of Paper Chemistry 26, No. 3, November, 1955, pp. 180-181. A critical detailed study was made of the pH of cold and hot extracts of various papers and the effects on pH of successive extractions, of the time of extraction, and of the ratio of paper sample to the amount of water. Measurements were made with a pH meter and by means of glass electrodes. Both the TAPPI and the sodium chloride techniques were used. To obtain a precision of 0.1 pH unit, at least seven replicates were required, and admittedly the precision is never very satisfactory and fails to give what is termed the true "acidity characteristics" of the paper. The acid content of the extracts of the samples was also determined by titration with 0.02 N sodium hydroxide, and here too, the acidity was a function of the extraction time; e.g., after one hour by the TAPPI method, a paper gave an extract requiring 65 ml. of 0.02 N sodium hydroxide; after 21 days of extraction 1200 ml. were required. In certain cases the acidity was determined by extracting the paper directly with 0.02 sodium hydroxide, and the results differed markedly from those obtained (for the same extraction period) by the TAPPI method. The uncertainties inherent in using the aqueous sodium hydroxide extraction are discussed, and borax is suggested as a possible replace-

ment for sodium hydroxide. The difficulties in obtaining a clear picture of paper acidities are outlined and may often be attributed to the presence of aluminum compounds retained by the paper. Long extraction periods may cause hydrolysis. Possible improvements in the present methods are suggested. 21 tables, 16 figures, and 13 references.

*THE PENETRATION VOLUMETER. Instituut voor Grafische Techniek T.N.O. I. G. T. Inform. Leafl. A-5, Ter Gouwstraat 1, Amsterdam-O, May 1955, 2 pp. (Doh. 1.5/5). Printing Abstracts 10, No. 9, September 1955, pp. 518. The instrument measures the amount of oil absorbed by a paper at any moment during the penetration process. An inert oil of not too high a viscosity, e.g., paraffin or castor oil is used; the actual viscosity used depends on the porosity of the paper. Aqueous solutions cannot be used. The instrument and its cleaning and preparation for use and the determination itself are described. Paper with a coating, e.g., chromo-paper and art paper, shows penetration diagrams with one or several discontinuities which indicate the transition between two layers. Highly calendered paper or thinly-coated paper (e.g., machine-coated), often shows a curved penetration curve, which indicates gradual transition of various layers. High-gloss paper often yields results of low reproducibility.

*HOW TO TAKE PRODUCTION OUT OF HIT-OR-MISS CLASS. R. N. Brownlee. Pulp & Paper 29, No. 11:130-2 (Oct., 1955); cf. B.I.P.C. 26:246-7. Bulletin of the Institute of Paper Chemistry 26, No. 3, November 1955, pp. 212. An instrument, the Handle-O-Meter, recently developed by Johnson & Johnson Engineering Research for measuring the subjective process of evaluating the quality of paper called handle or "hand" is described. The sample to be tested is placed over a 0.25-inch wide slot in the machine, and a penetrator arm pivoted on an eccentric cam

contacts the sample and forces it into the slot. A strain gage detects the resistances of the sample and records the combined values. 4 figures.

LITHOGRAPHY - GENERAL

FOUNTAIN DOPE. John D. Payne. New England Printer and Lithographer 18, No. 10, November, 1955, pp. 22, 24 (2 pages). The more obvious sources of dust and dirt that cause poor printing quality are discussed. Sources considered are paper mill (slitters, cutters, machine felts), printer (anti-offset spray and other sources). A recommended solution to the problem is the installation of sheet cleaning devices (vacuum operated) by press manufacturers or the printer.

*GOOD PRINTING RESULTS WITH TRETEX PLASTIC ROLLERS. A. G. Tretorn. Hamburg; Fogra Literaturdienst, April 1955 (in German). Printing Abstracts 10, No. 9, September 1955, pp. 524. The rollers have a pore-free surface, and permanent elasticity, do not deform or shrink, and are not sensitive to atmospheric conditions. The rollers do not require running-in and retain their tack.

IN YOUR PLANT: COLOR - IT CAN MAKE YOUR PLANT SAFER AND MORE PRODUCTIVE. Faber Birren. The National Lithographer 62, No. 10, October, 1955, pp. 36-37 (2 pages). This article points out how color has proved its case to help produce better work and makes for greater safety and morale. Uniform brightness has been found to be important. This is gotten by heightening tone of normally dark objects as machinery and softening tone of white walls. The color specifications set up for Magill-Weinsheimer Company's new plant are given. This includes mention of how and what kind of color was used.

*TINTING PREVENTIVE AGENTS IN OFFSET PRINTING. Fadenzahler 4, 1955, pp. 3-4 (in German). Printing Abstracts 10, No. 9, September, 1955, pp. 542. These agents are usually acidic compounds which are added to the

damping water or to the ink and are designed to keep the offset plate clean. They should be avoided wherever possible because the image suffers, the screen dots become smaller and the fine details disappear. Some of the causes of tinting and methods of avoiding them are indicated.

GRAPHIC ARTS - GENERAL

QUALITY CONTROL...WHAT IT CAN DO. Charles C. Bohrer. Graphic Arts Monthly 27, No. 11, November, 1955, pp. 92, 94, 96, and 98 (4 pages). The article deals with "quality control" in printing plants. In general terms it describes how a quality control department can promote efficiency and cooperation in and among departments by keeping a check on variables that effect quality. Such variables are relative humidity, fountain pH, color in printing, register and so forth.

*MEASURING FILM THICKNESS. F. D. Johnson. Can. Paint & Varn. Mag. 28, No. 12, 1954, pp. 5-8, 43-5; Rev. Curr. Lit. Paint Col. Varn., 28, No. 164, March-April, 1955, pp. 329. Printing Abstracts 10, No. 9, September, 1955, pp. 512. A survey is made of various methods of measuring thickness of wet or dry films, covering mechanical, magnetic, electric and radioactive methods.

DIRECT-IMAGE OFFSET PROCESS. Staff Writer. Printing Magazine 79, No. 11, November, 1955, pp. 66 (1 page). This article describes how Newspaper Publishers Assn. Research Institute laboratory has combined a web fed offset press with direct image affect to produce 12,000 newspapers per hour. The following advantages are claimed: No stereotyping equipment is required, rotary press speeds are brought within reach of the smaller paper, weight of press plates is negligible; electronically made plates are usable as they are not run on the press and do not have to be molded, finer screens may be used, foundry and wood type are practical under the single platemaking operation, and no wear on machine set type or cuts results.

*THE I. G. T. - SLIPMETER. Instituut voor Grafische Techniek T.N.O. I.G.T. Inform. Leafl. A-4, Ter Gouwstraat 1, Amsterdam O, April 1955, 3 pp. (Doh. 1.5/4). Printing Abstracts 10, No. 9, September, 1955, pp. 534. The instrument is used for measuring the speed of the impression cylinder with its packing, with respect to the printing forme. As this is done before the run, forme wear and mis-register due to incorrect thickness of packing may be avoided. The slipmeter consists of a rectangular printing forme divided into two parts. These parts can slide relative to each other, the amount of the displacement being indicated on the scale in the front of the instrument. The method of measurement, the calculation of the error in the thickness of packing and the adjustment of the slipmeter to the correct height with the aid of a limit gauge are described.

SARAN FILM AND POLYSTYRENE. F. C. Dulmage. Gravure, November, 1955, pp. 31, 32, 61 (3 pages). The important properties of saran and polystyrene that make these plastics valuable as packaging materials are discussed.

HIGH-SPEED ELECTRONIC PROCESS INTRODUCED BY BURROUGHS. Printing Magazine 79, No. 5, May, 1955, pp. 80 (1 page). Rush, April, 1955, pp. 20. Printing Abstracts 10, No. 7, July 1955, pp. 418. Electrographic Recording, introduced by Burroughs Corp., is said to print at the rate of 5,000 characters per second. It is accomplished in a three stage operation. Characters first take the form of a pinpoint pattern of electrostatic charges on the surface of coated paper. The pattern is made visible by passing the paper through a dry ink bath. Here, tiny particles of powdered ink cling to the pin-point areas where the paper has been charged. The paper then rolls through a third station where a temperature-controlled hot plate fixes the ink permanently. The paper moves continuously through the three stations at the rate of 44 ft per sec. The unit is small and low

cost. The present model uses a single print head to create a single line tape, but is capable of being expanded to include a number of print heads.

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PHOTOGRAPHY, TONE AND COLOR CORRECTION

COLOR CORRECTION PROCESS. Philip E. Tobias. Journal of the Optical Society of America 45, No. 7, July, 1955, pp. 535-538 (4 pages). A method of color correction has been developed based upon the observation that any color within the gamut of the four-color process printing inks can be reproduced by pairs of the chromatic inks plus black. The chromaticity coordinates of a color will vary with the two chromatic ink mixtures, whereas the luminance is controlled by the amount of black used. A device is developed in which the empirical relationship existing between the chromaticity of a given copy and the amounts of each of the chromatic inks required for match is readily employed. The luminance of the copy is then matched by addition of black. Inherently, this process has the advantage of basic simplicity, allowing empirical compromises or corrections for distortion.

THE RELATIONSHIP BETWEEN THE DENSITIES AND DOT SIZES OF MULTI-COLOUR HALFTONE IMAGES. F. Pollak. Journal of Photographic Science 3, No. 4, July/August, 1955, pp. 112-116 (5 pages). The relationship between ink density, dot size and integrated density of monochrome halftone areas is briefly reviewed and their colour is compared with that of continuous tone areas. From the monochrome relationship and from those established by Neugebauer an expression for the densities to red, green and blue light of multi-colour halftone areas is derived, and the principles of the additivity of halftone densities, and of the equivalence of continuous tone and halftone densities are deduced. On the basis of the former principle it is shown that with equal dot sizes of the image components a neutral scale can only be obtained if restrictions are placed on the concentration and colour of the inks. Finally, examples of the failure in practice of the additivity principle are discussed.

GRADATION WITH CROSS-LINE SCREENS AND LITHOGRAPHIC EMULSIONS. J. H. Bow. Journal of Photographic Science 3, No. 4, July/August, 1955, pp. 121-123 (3 pages). A brief summary of published information on gradation when using cross-line screens is made. The effect of a supplementary highlighting exposure when using "lith" type emulsions is studied. Comparison reproduction curves indicate that considerable modification of gradation is possible when using a cross-line screen and employing the suggested technique.

A QUANTITATIVE STUDY OF COMBINED EXPOSURES IN HALFTONE NEGATIVE MAKING. Yutaro Nakahara and Yasuyoshi Akiyama. Journal of Photographic Science 3, No. 4, July/August, 1955, pp. 107-111 (5 pages). In all halftone work it is customary to combine several exposures--for instance a highlight, a detail and a flash exposure--in order to control both the contrast and the shape of the tone reproduction curve. The result of combining these exposures is well known qualitatively, but the quantitative study seems to be imperfect. In 1950 J. A. C. Yule worked out a method of calculating the results of several exposures and a formula showing the relationship of the flash and the image exposures. In this paper a formula for calculating the results of combined exposures with the ordinary cross-line screen is described and a method of exposure control with a new exposure computer is shown.

MASKING FOR HALFTONE. F. Pollak. Journal of Photographic Science 3, No. 4, July/August, 1955, pp. 180-188 (9 pages). In a recent paper the author drew attention to important differences between the colours of continuous tone and halftone images and a set of equations was established connecting the colour of a halftone area (when expressed in terms of the densities to red, green and blue light) with the dot sizes of the printers. In the present paper it is shown that because yellow inks used in practice are ideal, these equations are soluble given the halftone masking equations.

If it is assumed that the strengths of the inks are high, the masking procedure is considerably simplified. The resulting masks are non-linear, having greater contrast in the highlights and less contrast in the shadows than conventional masks (which would give correct masking only for continuous tone processes), but the average contrast is similar. It is also shown that, in spite of the various simplifying assumptions, this masking procedure should result in good reproduction of colours and neutrals.

TONE REPRODUCTION IN OFFSET LITHOGRAPHY. V. G. W. Harrison (Associate) G. A. Mitchener and L. E. Lawson. Journal of Photographic Science 3, No. 4, July/August, 1955, pp. 97-106 (10 pages). The basic assumptions of Tritton and Wilson's theory of the ideal screen negative for photolithography are examined. These assumptions do not hold rigidly because of changes in dot size from negative to positive and from positive to paper print and because of the effect of light scatter within the paper. A relationship between the tones of a screen negative made on modern "lith" materials and those of a contact positive prepared from it is established. A similar relationship exists between the contact positive and the deep-etch offset paper print prepared from it. On the basis of these results the characteristic curve of an ideal screen negative for photolithography is computed and compared with the Tritton and Wilson curve and curves for real screen negatives. The performance of available cross-line and contact screens is examined: both fall far short of the requirements for satisfactory tone reproduction. The highlight reproduction of both types is similar; in the shadows the contact screens give the worse reproduction. The shadow contrast with magenta contact screens may be more than five times the highlight contrast. The use of filters for controlling contrast in contact screens is unsatisfactory since the shadow contrast is affected much more

than the highlight contrast, and a further drawback is the great variability of these screens from one batch to another. It is concluded that the ideal screen for photolithography has not yet been prepared.

POSITIVES FOR PHOTOLITHOGRAPHY BY CHEMICAL REVERSAL. F. G. S. Cackett. Journal of Photographic Science 3, No. 4, July/August, 1955, 129-133 (5 pages). In offset lithography, the deep-etch process of platemaking which is the most used, demands a positive. The conventional methods of making screen positives are discussed briefly. Line and screen positives can be made directly on the camera and by contact by chemical reversal processes from suitable copy. A dark room camera is especially suitable as lateral reversal is not required, and if the copy is reasonable the positives so produced can be used for printing down without further contacting. Film is the best material for chemical reversal and as this is necessary for much work that has to be patched up its use is particularly appropriate. While some colour work has been done the method is at present most suitable for single colour work with "lith" emulsions. A vignetted contact screen can also be used and then the screen holding gear can be utilized for masks if necessary. When panchromatic material of the "lith" type is available for use with neutral contact screens, colour work may be more practical. Details rendition is good and sufficient dot reduction possible. Some curves are given which show that tone rendering follows that of negative work done with the contact screen. Screen positives by chemical reversal together with specimens of printed work were shown. The use of smooth plates would better tonal reproduction but in all operations standardization is essential.

PLANOGRAPHIC PRINTING PROCESSES

REMOVING NON-BLINDING LACQUER. LTF Research Progress #34. Methods and materials to remove non-blinding lacquer from small work areas on zinc, aluminum, and copperized aluminum deep-etch plates are described.

* ETCHING PREPARATION FOR LITHOGRAPHIC PLATES. British Patent 733950. Frederick W. Delmarin. Tin-Printer and Box Maker 31, No. 371, December, 1955, p. 10. A final etching preparation for use in the production of metal lithographic printing plates, especially offset printing plates, comprises an aqueous solution of one or more silicofluorides to which has been added one or more chromium salts which have the chromium in the anions and not in the acid radicals.

"TANNIC - ALUM ETCH FOR ZINC". LTF Research Progress #35. LTF's development of a formula for a tannic and alum etch for surface or deep-etch zinc plates is described. Solution works as a combination post-treatment and etch for short run plates and considerably improves desensitization. Especially recommended for plates that are hard to develop or which require ammonia.

SHORT-CUTS IN PLATEMAKING. LTF Research Progress #33. The recommended steps in making zinc surface plates are discussed and evaluated. Article is aimed to guide those who must reduce platemaking time to not eliminate a vital step while retaining a less important step.

COPPER PLATING WITH CHEMICALS ON ZINC, STEEL AND ALUMINUM. Reprint of article from LTF Research Progress #34. Printing Equipment Engineer 86, No. 3, December, 1955, pp. 94-102-103 (3 pages). Also reprinted in the December, 1955 issue of Inland Printer, pp. 64-65 (2 pages). Describes evolution of formulas for copper plating deep-etched images on zinc and aluminum plates and for copper plating steel ink rollers on press to prevent stripping.

*DIAZOTYPE PROCESSES AND MATERIALS FOR PRODUCING PHOTOMECHANICAL PRINTING PLATES. British Patent 729746 (addition to British Patent 699412 and 706028). A. G. Kalle & Co. Printing Abstracts 10, No. 7, July, 1955, p. 420. The light sensitive constituent consists of a water-

insoluble diazo compound which contains one or two 5:6:7:8-Tetrahydro-2-diazonaphthol-(1)-ar-sulphonic acid or 5:6:7:8-tetrahydro-1-diazonaphthol-(2)-ar-sulphonic acid residues in aromatic ester-like or aromatic amide-like combination in the molecule.

*LIGHT-SENSITIVE MATERIAL FOR PHOTOMECHANICAL REPRODUCTION AND PROCESS FOR THE PRODUCTION OF IMAGES. British Patent 729409. May 4, 1955. A. G. Kalle & Co. Printing Abstracts 10, No. 7, July, 1955, p. 420. The light-sensitive layer contains water-insoluble compounds corresponding to the general formula: $D-SO_2-N$ Z. Where D stands for an o-quinonediazide residue, and N is a ring member in a heterocyclic system supplemented by Z so as to form a ring, and in which N is directly linked to at least one further ring atom; Z may be substituted.

PAPER AND INK

*APPLICATION OF THE POLYSTYRENE REPLICA TECHNIQUE TO THE EVALUATION OF PAPER SURFACES. George Jayme and Marianne Harders-Steinhauser. Das Papier 9, 17/18: September, 1955, pp. 437-9. (In German; English and French Summaries.) Bulletin of the Institute of Paper Chemistry 26, No. 2, October, 1955, pp. 115-116. A polystyrene vacuum replica technique is described which has been applied with excellent results to the microscopical evaluation of paper surfaces and to the study of the effect of beating on the pulps from which the papers were made. The denser and better closed the fiber and fibril structure and the resulting paper surface, the less variations in height are presented by the replica, and increased sharpness of all details (lying more or less in one plane) is obtained on microscopical observation. Rough paper surfaces (representing many peaks and valleys), on the other hand, do not give sharp results in one plane; focusing in the microscope must be done in several planes, each of which will contain unsharp or blurred sections. Six examples (pictures of chromatographic, filter,

writing, bond, and glassine papers and a regenerated viscose film) are included and illustrate the applicability of the new method; even the structure of cellulose films can be identified. 6 photomicrographs and 2 references.

PAPER COATING PROCESS REVEALED. National Lithographer 62, No. 6, June, 1955, pp. 64,66 (2 pages). Printing Abstracts 10, No. 9, September, 1955, pp. 514. An electrostatic process for coating paper has been developed at the Battelle Memorial Institute, Columbus, Ohio. An electrically charged dust cloud of pigment and heat-sensitive resinous binder is driven against a moving belt of paper by an electrostatic field. The coating is then fixed by the application of heat.

STUDIES OF INK TRANSFER. C. H. Borchers. Modern Lithography 23, No. 9, September, 1955, pp. 68,69,71,181 (4 pages). Bulletin of the Institute of Paper Chemistry 26, No. 3, November, 1955, pp. 210. The Lithographic Technical Foundation Pick Tester, with a strain gage mounted on the shaft which supports the anvil, was used to study the forces involved in splitting ink films. Oscilloscope traces illustrate the force-time relationships when the bare anvil strikes and leaves the blanket with no ink on the blanket, with films of tack-tested inks no. 2 and no. 7, with a film of a standard linseed oil ink, and with a film of a quick-set ink on the blanket. Corresponding relationships are shown for a coated paper mounted on the anvil and films of the standard linseed oil ink and the quick-set ink on the blanket. It was found that the forces required to split the ink films between blanket and paper were about double the forces required to split the ink films between blanket and bare anvil. The force required to split the quick-set ink between blanket and paper was almost 25% greater than the force for the linseed oil ink. This force difference is ascribed to greater absorption of vehicle from the quick-set ink by the paper during the contact time of 0.001 second. 6 figures.

IT PAYS TO THINK ABOUT INK - Parts I and II. H. Bettye Stout. American Printer and Lithographer 136, No. 6 and No. 8, June and August, 1955, pp. 66, 67, 68 and 66, 67 (5 Pages). Bulletin of the Institute of Paper Chemistry 26, No. 2, October, 1955, pp. 127-128. In the first part of the article color fastness of lithographic ink is discussed. Emphasis is placed on the fact that there is no color which will withstand the action of light, sun, and atmospheric influences for an unlimited time and that the terms permanency and light fastness are only relative. There are some inks which are impossible to duplicate exactly with fast-to-light raw materials, whereas other colors (which can be duplicated exactly) exhibit poor working properties on the press. The factors which determine fastness of colors include the nature and concentration of the dyestuff, the nature of the stock surface, application of ink, paper which develops a chemical reaction with the ink, sudden drops in temperature, etc. Exposure tests conducted at different seasons give different results; a protective varnish has a favorable influence on the fastness of an ink. Consultation with the ink manufacturer is recommended in all cases. The second part deals briefly with sympathetic and scented inks, their selection, and applications.

MAKE READINGS CAREFULLY WITH PAPER HYGROSCOPE. C. H. Borchers, LTF Research Progress #35. Special tests to determine effect of different methods of using the Paper Hygroscope on readings of paper RH are described. Test data is shown which proves that the most practical yet sufficiently accurate method is to make readings after hygroscope has been in the paper pile for exactly one minute.

COLOR MATCHING - PART I. H. Bettye Stout. American Printer and Lithographer 136, No. 9, September, 1955, pp. 52-53 (2 pages). This article gives some basic rules to follow when mixing and matching printing inks for the right color.

COLOR MATCHING - PART II. H. Bettye Stout. American Printer and Lithographer 136, No. 11, November, 1955, pp. 20-21 (2 pages). This article, as did the first one continues with basic rules to follow in color matching. Some of the topics discussed are making tints, working in proper light, accuracy, cleanliness, effect of overprint varnish, "bronzing" of ink, and effect of the papers color and absorbency.

HICKIES AND SPOTS. Robert F. Reed. LTF Research Progress #35. Hickies and spots in printed work can be caused by ink skin or particles of dried ink, by slitter or cutter dust on paper, by particles of fiber or coating picked from the paper surface, by lint and fuzz, by dust or dirt from the ceiling or from accumulations on press members, or by shedding dampener rollers. Methods of identifying the source, correction, and prevention of trouble are described. Illustrated.

LITHOGRAPHY - GENERAL

AN OUNCE OF PREVENTION. Roy P. Tyler. Share Your Knowledge Review 37, No. 2, November 1955, pp. 13-15 (3 pages). Hints for Better Press Performance - A discussion on Lubrication, Cleanliness, Inking Rollers, Ink Fountain, Registering Mechanism, Roller or Tape Table, Vacuum System, Telescopic Suckers, Delivery Grippers, Cylinders, and the importance of inspection at regular intervals.

*DAMPENING MECHANISM FOR LITHOGRAPHIC PRESSES. Joseph Schultz. British Patent 733404. Tin-Printer and Box Maker 31, No. 371, December, 1955, pp.10. A moisture receptacle and moisture dispensing member are mounted in means which are pivoted for movement of the member on an axis towards and away from a water supply and a dampening roller. The device is provided with elements providing a counterbalance to the member on the opposite side of the axis. The movement of the member is automatically controlled by its moisture content.

RUNNING OFFSET PLATES. Glen H. Brown. National Lithographer 62, No. 9, September, 1955, pp. 61-69 (5 pages). This article tells in brief how Albumin, Deep-Etch, and Multi-Metal plates, such as: Aller Plates, PDI Lithengraved Plates, IPI Tri-Metal, and Time-Life Plates, are made and how to handle them on the press. Also what fountain solutions are best suited for each type plate. Replating affected areas on a chromium plate with an electro-plating tool and a 6 volt battery is also discussed.

RESEARCH MAIN KEY TO INCREASED PRODUCTION. Michael H. Bruno. New England Printer and Lithographer 18, No. 11, December, 1955, pp. 48-49 (2 pages). This article was also published in a two part series in the National Lithographer, November and December, 1955. Article based on a talk presented by the author at the annual convention of Amalgamated Lithographers of America in Boston in 1955. The improvement in the quality of lithography during the past 15 years has been coupled with an increase in production and the combination of these two is the most important thing that has happened in lithography—even more important than offset, photocomposing and deep-etch--because it is this improvement in quality and the ability to produce it consistently that has put lithography in the "big time" and will keep it there. What research has done for Photography, Platemaking, Presses, and Paper and Ink is given and a resume of plans for future research at LTF is discussed.

QUALITY OF LITHOGRAPHIC IMAGES. G. W. Jorgensen. LTF Research Progress #34. This article reprinted in Printing Equipment Engineer 86, No. 3, December, 1955, pp. 88—(5 pages). Graininess in printing is included in the principal factors that affect printing quality. Types and sources of graininess are described and illustrated. Factors involved in the perception and measurement of graininess and the preparation of test sheets are discussed.

DIRECT-IMAGE OFFSET COST STUDY. American Newspaper Publishers Assoc. Research Bulletin #117. December 14, 1955, pp (2 pages). The Direct-Image Offset process is compared to offset and letterpress on a cost basis. Preliminary figures indicate D-I-O is too expensive to be attractive to newspapers wishing to convert from flatbed to rotary. The costs of the materials and equipment needed for D-I-O are listed. It is reported that completely satisfactory results are not obtained if no debosser is used. Plates debossed in a mat roller reproduced satisfactorily.

HOW TO MAKE HALFTONE VIGNETTES. Wayne E. Schmuhl. LTF Research Progress #33. The theory, equipment, and methods of producing continuous (step-less) tone gray scales, and circular, and rectangular vignetted tint blocks is described.

DAMPENING SYSTEMS FOR OFFSET PRESSES. W. H. Wood. American Pressman 66, No. 2, January, 1956, pp. 33-37 (4 pages). Various offset plate dampening mechanisms or systems, starting with a patent issued to Cooper in 1868 and ending with a patent issued to the Harris-Seybold Co. in 1954 are considered. These are listed under contact or non-contact systems as best describes the individual devices. Finally, a list of required characteristics and desirable characteristics an offset press dampening device should have is given.

*ROLLERS FOR LITHOGRAPHIC OFFSET PRESSES AND THE LIKE. J. Schultz. U. S. Patent 2,704,392. Official Gazette 692, No. 4, March 22, 1955, p. 410. A dampening roller for a lithographic press has: (1) a rigid core, (2) an inflatable tube helically wound on the core, (3) a moisture-absorbent and moisture-dispensing outer cover, (4) a non-expanding sleeve for the tube disposed interiorly of the cover, (5) controllable air passages communicating with the tube, (6) end extensions for the core, (7) collars mounted on the core extensions, (8) compression springs mounted on the extensions exteriorly of the collars, (9) discs mounted on the outer end of the ex-

tensions, the ends of the springs abutting the collars and the discs, respectively, the sleeve being removably secured at its ends to the collars, and the outer cover being removably secured at its ends to the discs.

GRAPHIC ARTS - GENERAL

GEORGIA WEEKLY GOES DAILY WITH ROTARY OFFSET. American Newspaper Publishers Association Research Bulletin #119, January, 1956, (2 pages). A short, detailed description is given of how a Georgia newspaper converted from linotype set, flatbed printing to rotary offset. Ozalith Positive Presensitized Aluminum Plates are used. The preparation of the positives using a Justowriter, Kodagraph film, Rolleiflex negatives, a magenta screen and an enlarger is described. Costs for the plate and chemicals used are given.

HOW YOU CAN USE COLOR IN THE PLANT. Faber Birren. Inland Printer 136, No. 2, November, 1955, pp. 37-39 (3 pages). The functional application of color and its effect on worker efficiency is discussed. Points mentioned include best brightness to darkness ratios to minimize eye fatigue, selection of hues and colors for different work areas, and use of a special color code for hazardous locations, electrical controls, fire equipment, and machinery.

THE GRAVURE-OFFSET PRESS. Maurice J. Beam. National Lithographer 62, No. 11, November 1955, pp 56, 58 (2 pages). This new type press prints from a standard gravure cylinder wiped by a doctor blade to a gelatin offset blanket; the blanket transfers the image to paper which is fed between an endless belt and the blanket cylinder. The gelatin offset blanket is also wiped by a doctor knife eliminating necessity for exact tooth to tooth gearing between the cylinders.

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Compiled by the Research Department of the

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LITHOGRAPHIC ABSTRACTS - MARCH, 1956

PHOTOGRAPHY, TONE AND COLOR CORRECTION

*PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL FOR MAKING HALFTONES. U. S. Patent 2,691,586. J.A.C. Yule; R. E. Maurer, Assigned to Eastman Kodak Co. Filed June 4, 1952. Monthly Abstract Bulletin 41, No. 11, November, 1955, pp. 637. A film capable of being desensitized by the Clayden effect can be prescreened by a high-intensity, short-duration exposure through a halftone screen which desensitizes the emulsion in a uniform, undulating halftone pattern. Methods of producing hypersensitization or a latent image to act as a development center in the centers of the dot areas which have not been desensitized are also described.

*INCREASING CONTRAST OF HALFTONE REPRODUCTIONS. U. S. Patent 2,691,580. D. J. Howe. Assigned to Eastman Kodak Co. Filed Aug. 27, 1953. Monthly Abstract Bulletin 41, No. 11, November, 1955, pp. 637. A method of making a halftone record is described using a film which is capable of being desensitized by the Clayden effect. The film is exposed twice through a halftone screen, first to a high-intensity, short-duration, uniform flash, and second to the continuous-tone image to be recorded, but using a lower-intensity and longer-duration flash. This gives a high-contrast, halftone image.

*PRESCREENED PHOTOGRAPHIC FILM EMPLOYING ALBERT REVERSAL. U. S. Patent 2,691,583. R. E. Maurer, Assigned to Eastman Kodak Co. Filed March 21, 1951. Monthly Abstract Bulletin 41, No. 11, November, 1955, pp. 637. Prescreened photographic film can be produced by employing the Albert effect to desensitize the corners of the dots.

*PRESCREENED POSTERIZING PHOTOGRAPHIC FILM. U. S. Patent 2,691,585. J.A.C. Yule; R. E. Maurer. Assigned to Eastman Kodak Co. Filed June 4, 1952. Monthly Abstract Bulletin 41, No. 11, November, 1955, pp. 637. A prescreened film suitable for posterizing is described, having three, four, or five levels of sensitivity within each dot area.

POLYESTER PHOTOGRAPHIC FILM BASE. Deane R. White, Charles J. Gass, Emery Meschter and Wilton R. Holm. SMPTE Journal 64, No. 12, December, 1955, pp. 674-678 (5 pages). Properties of "Cronar" polyester photographic film base are outlined. The utility and importance of these characteristics in the use of photographic films, especially cine films, are discussed. Optical clarity, high wear and tear resistance, low moisture sensitivity and relatively high stiffness modulus combine to make this base an excellent one for general use and one which is particularly useful in certain demanding applications.

HOW TO BUILD A GOOD DIAPHRAGM CONTROL. Stanley Goldsmith. American Printer and Lithographer 136, No. 12, December, 1955, pp. 42 and 44 (2 pages). The author describes a method of making and calibrating a diaphragm control. The control can be calibrated by setting up the camera for different magnification and reduction values and measuring the light intensity at the glass. For those who may not have a sensitive photo-electric meter another system for calibrating the control is described.

PRINCIPAL TECHNIQUES OF LITHOGRAPHIC COLOR SEPARATION. Bruce E. Tory. Graphic Arts Monthly 27, No. 9, September, 1955, pp. 97,98,100,102, and 104 (5 pages). The author treats color separation of reflection copy and the use of magenta masking combined with a gray contact screen to produce direct halftone negatives with some color correction. Some of the methods and materials used in making separations from transparencies are described. A method of masking separation negatives with low contrast positive overlays is given.

COPYING HALFTONES. Fred Worth. Modern Lithographer and Offset Printer 11, November, 1955, pp. 19 and 20 (2 pages). The author offers some suggestions for rescreening halftone copy to reduce moire effects. If a good print is available he suggests making a line shot of it. However a muddy print will produce results which are no better than that obtained when the copy has been rescreened.

A PRACTICAL APPROACH TO THE LITHO CAMERA. Marvin Haenze. Graphic Arts Monthly 27, No. 12, December, 1955, pp. 76,78,80,82 (4 pages). The author gives some practical suggestions on the handling of copy and some typical exposure conditions. The proper use of filters to hold or drop certain colors on the copy is given. Problems involving the use of filter factors are worked out. Suggestions for copying fine line work are given.

PLANOGRAPHIC PRINTING PROCESSES

*STARCH-COATED PAPER-BASE MASTERS FOR PLANOGRAPHIC PRINTING. U. S. Patent 2,724,665. Raymond L. Oransky and Towers Doggett (to S. D. Warren Co.). Official Gazette 700, No. 4, November 22, 1955, pp. 714. 1. A planographic printing plate comprising a paper base and a water-insoluble coating thereon presenting a planographic printing surface, said coating consisting essentially of finely divided mineral pigment and a water-insoluble hydrophilic adhesive component comprising the reaction product of hydroxyalkyl ether of starch and an amino-aldehyde resin, the ratio of said pigment, hydroxyalkyl ether of starch and an amino-aldehyde resin being from about 25% to about 75% of the hydroxyalkyl ether of starch based upon the weight of the pigment, and from about 25% to about 100% of the amino-aldehyde resin based upon the weight of the hydroxyalkyl ether of starch.

*PLANOGRAPHIC PLATE AND METHOD OF MAKING IT. U. S. Patent 2,696,783. D. A. Newman; A. T. Schlotzhauer. Assigned to Columbia Ribbon and Carbon Mfg. Co. Inc. Filed November 6, 1948. Monthly Abstract Bulletin 41, No. 11, November, 1955, pp. 635. A planographic printing plate is described as including a base having a coating consisting essentially of a dibasic acid styrene copolymer and an ink-receptive, water-repellent image formed on the polymer coating.

*PHOTOMECHANICAL RESIST. U. S. Patent 2,690,966. L. M. Minsk and W. P. Van Deusen. Assigned to Eastman Kodak Co. Filed January 20, 1951. Monthly Abstract Bulletin 41, No. 11, November, 1955, pp. 635. The light-sensitivity of photomechanical resist layers comprising cinnamic acid esters of polyvinyl alcohol containing at least 60 mole percent of polyvinyl cinnamate units,

$$-CH_2-\overset{|}{C}H-O-C(O)-CH=CH-C_6H_5$$

as the combined carrier and light-sensitive material can be increased up to 100 times or more by inclusion of a triphenylmethane dye as a light-sensitizing agent. The pararosaniline series of dyes are preferred, e.g., methyl rosaniline chloride (Crystal Violet), and their sensitizing action increases as the coating dope is aged. In the presence of "stable" organic peroxide, e.g., 1-hydroxycyclohexylhydroperoxide, this aging period is reduced to a minimum. Duplicate of Brit. 717,711 and Fr. 1,004,922.

PROCESSING AND RUNNING PRESENSITIZED PLATES. Harris Impressions 16, No. 1, February, 1956, (5 pages). Part 1 of 2 part article. This article describes the main advantages of presensitized plates as: reduced cost, simplicity of making and improved quality. These are the reasons 40% of the plants with offset equipment are using them. Two methods (3-step and 1-step) of making Harris presensitized plates are described in detail. Both sides of these plates can be used. Important precautions emphasized are careful handling to avoid scratches and care to avoid exposure to bright light and heat as these will cause scum. Second part will describe handling plates on the press.

PROGRESS IN PRESENSITIZED PLATES. Modern Lithographer and Offset Printer 10, October, 1955, pp. 27-28 (2 pages). Briefly reviews background and difficulties in using bichromate-albumen coatings for presensitized plates. Scantily covers diazo-gelatine and diazo-polyvinyl alcohol plates. Discusses diazo resin plates; their advantages and disadvantages. KPR, also mentioned.

POSITIVE METAL PLATES BY XEROGRAPHY. Offset Duplicator Review 5, No. 10, October, 1955, pp. 35 (1 page). Positive-working metal offset plates can now be prepared through Xerography. The key to the new method is an inexpensive 10" x 15" translucent film manufactured by the Haloid Company, called a XeroX Trans-Positive Sheet, onto which any type of original document may be copied by xerography. The sheet, in effect a positive film, is then transposed on a positive working, presensitized metal plate, and both are exposed to an ultra-violet light.

*BIMETALLIC OFFSET PRINTING COPPER-PLATING COMPOSITION. U.S. Patent 2,703,295. M. S. Kantrowitz and A. E. Yelmgren. Filed October 7, 1952. Monthly Abstract Bulletin 41, No. 11, November, 1955, pp. 635. Bimetallic offset printing plates are prepared by chemically plating copper on a more electropositive metal base, with an alkaline "coppering" solution containing 5 to 10 percent neutralized copper sulfate, 4 to 6 percent pyrogallol, and 2 to 5 percent ammonium hydroxide. The freshly prepared solution is flowed, sprayed, or brushed onto a zinc plate bearing a resist image, run back and forth over the surface for about 1 min. to deposit the copper, and then rinsed away with water; the plate is dried by the use of acetone.

PAPER AND INK

AN EXPERIMENTAL STUDY OF INK FILM THICKNESS. William H. Wood. Modern Lithography 23, No. 12, December, 1955, pp. 80, 81, 83 (3 pages). This article describes how radioactive tracers and materials were used to study the ink film thickness on a running offset press. In one case five steel rollers of the ink distribution system were given small areas of radioactive nickel 63 imbedded in plated copper. In another case radioactive ink was used. The theory is proposed that when a large quantity of ink is available to enter the roller nip physical properties of the ink control the split but that in thin ink films the split is largely dependent on temperature, roll

pressure and construction, and speed of rotation and much less on ink properties.

STUDIES OF INK TRANSFER. Chas. H. Borchers. Modern Lithographer and Offset Printer 51, No. 11, November, 1955, pp. 17, 18, 19 (3 pages). Both PATRA and the Lithographic Technical Foundation are doing valuable services in investigating the fundamental principles on which our processes are based. The article is an abridgement of a paper presented to the TAGA in Boston in May, 1955. The graphs showing the stress time relationships, at the moment of impression using inks of different characteristics, are of basic practical importance and the explanations are presented in a clear and straight-forward way.

*VISCOSITY OF PRINTING INKS. D. Tollenaar. Verfkroniek, 1955, 28, 237. Paint and Paint Manufacture 26, No. 1, January, 1956, pp. 27. A modification of a viscometer previously described by Wachholtz has been employed by Tollenaar to study the relation between shearing stress and velocity gradient for a number of printing inks. It is stated that one advantage of the modified apparatus, in which a heavy cylinder replaces a plastic strip, is that the heat capacity of the metal rod is so large in comparison with that of the printing ink that any heat developed in the latter is rapidly dissipated.

IT PAYS TO THINK ABOUT INK - YELLOW INKS. H. Bettye Stout. American Printer and Lithographer 136, No. 12, December, 1955, pp. 48-49 (2 pages). This article sums up the most important properties of chrome; Hansa, benzidine and cadmium yellow pigments. These properties include opacity, tinting strength, light fastness and drying ability.

CAST COATED - A NEW ART PAPER NOW AVAILABLE TO PRINTERS IN GREAT BRITAIN. Paper and Print 28, No. 4, Winter, 1955, pp. 425, 427, 429, 431 (4 pages). This article describes the characteristics, applications and manufacture of cast coated papers. The availability and price of these papers in Britain are also discussed. Further information about printing cast coated papers, make-ready, ink, presswork, varnishing, embossing and trimming is given. References

to "Kromekote" and "Colorcast" papers are also made.

DRY COATINGS APPLIED ON PAPER BY NEW ELECTROSTATIC PROCESS. R. B. Reif. Modern Lithography 23, No. 11, November, 1955, pp. 58 and 60 (2 pages). Paper is coated with mica, flock, metallic pigment, carbon, wax, and many other diverse materials in a new electrostatic process developed for coating papers with dry materials in powdered form. Coating material is suspended as a dust cloud in air, charged electrically, and deposited on the paper web with strong electrostatic fields, in this new method developed for Bergstrom Paper Co., at Battelle Memorial Institute. This article goes on to tell how the process works, the nature of coating materials, and the design of the coating unit.

LITHOGRAPHY - GENERAL

FOUNTAIN DOPE. John D. Payne. New England Printer and Lithographer 19, No. 1, February, 1956, pp. 24, 26, 84 (3 pages). The delivery system can contribute to curling, hooking, or a variety of other problems, if it is not operated correctly or given proper care. The delivery system is gone over in maintenance and safety. There is a discussion of ways and means of delivering sheets to the pile for jogging control and static eliminations, as well as offset sprays.

ROLLER DEVELOPMENT GOES ON AND ON - Ink has always kept ahead of rollers... but now the lead is shortening. A.L.J. Duke. Paper and Print 28, No. 4, Winter 1955, pp. 453, 455, 467 (3 pages). The author briefly traces the history of the printing roller development to date. The essential qualities needed in printing rollers are given. The types of rollers, their properties and advantages discussed are: glue-glycerine, natural rubber, Neoprene, Thiokol, nitrile rubbers, polyvinyl chloride, and isocyanate rollers.

RELIEF PLATES ON OFFSET PRESSES. E. A. Kilheffer. Photoengravers Bulletin 45, No. 6, January, 1956, pp. 18-32 (15 pages). A general discussion on relief plates for dry offset. The article includes data on preparation of

the plate and its handling on the press.

*PROCESS CAMERA BACKS. U. S. Patent 2,730,939. Delbert T. Blatherwick. Assigned to Robertson Photo-Mechanix, Inc. Official Gazette 702, No. 3, Jan. 17, 1956, pp. 538-539. 1. A process camera back having a casing provided with aligned openings in the rear of the camera, said casing extending vertically from said openings, the extended portion of said casing forming storage space for a focusing screen holder and a sensitized material holder, said holders being vertically movable within the casing and the operating positions of said holders being between and in alignment with said openings, guiding means within said casing for one of said holders for guiding it in vertical movement from the storage space in the casing to its operating position with its forward face in the focal plane of the camera, guiding means for the other of said holders for guiding it in vertical movement from the storage space in the casing in a path parallel to and spaced from the path of movement of said first mentioned holder, said second guiding means being formed to carry the second mentioned holder, on approaching its limit of movement, into the vertical path of movement of the first mentioned holder, and to bring the second mentioned holder into operating position with its forward face in the focal plane of the camera.

DIRECT-IMAGE OFFSET - WHAT WILL IT MEAN TO LITHOGRAPHERS? Modern Lithography 23, No. 12, December, 1955, pp. 49, 125, 127 (3 pages). This article briefly describes the work of the American Newspaper Publishers Association and Hess and Barker Press Company in testing and evaluating the Direct-Image Offset process. The plate to be run on offset gets its image from a letterpress impression. After debossing the plates are ready for the offset press. The possible effects of this process on lithographers is also discussed.

GRAPHIC ARTS - GENERAL

COUNTING LABELS WITH FERRORESONANT RINGS. Eric Swarthe and Carl Isborn. Electronics 28, No. 10, October, 1955, pp. 128-129 (2 pages). Industrial application of photocell device and predetermined counter gives precise count and automatic control of paper-tape winding machine. Decade counters provide direct readout of label units.

*PROCESS FOR DEVELOPING AN ELECTROSTATIC LATENT IMAGE. R. B. Landrigan, R. E. Tom and Donald L. Fauser (to The Haloid Co.). U. S. Patent 2,725,304. Official Gazette 700, No. 5, November 29, 1955, pp. 905-906. 1. A process for developing an electrostatic latent image comprising areas of varying charge on a uniform insulating surface, said insulating surface being positioned on a conductive backing member, said process comprising drawing the field of force of said image uniformly externally above said insulating surface by positioning a continuous conductive surface having a width and length at least equal to the area of said insulating surface to be developed and out of contact therewith and spaced uniformly therefrom no more than 1/40", said conductive surface being connected to a source of variable D. C. potential of the same polarity as the image, generating and charging a cloud of finely-divided powder particles and passing the charged cloud between said insulating surface and said conductive surface within said field of force.

INDIRECT ROTARY PRESSES MAY BE LETTERPRESS ACE-IN-HOLE. Chas. A. Harwood. New England Printer and Lithographer 19, No. 1, February, 1956, pp. 48-49 (2 pages). The Indirect Rotary is a major project in Miehle's research and development department which today is devoting 65 percent of its time to letterpress projects. The Indirect Rotary can add solidly to letterpress printer's position on book printing and carton printing. Several Miehle Indirect Rotaries are being field-test operated now. Four problems yet to be solved are noted by Mr. Harwood. Cooperation of electrotyping industry on curved

plate problem is invited.

MODERN ADHESIVES IN THE PRINTING AND PAPER CONVERTING INDUSTRIES. A. E. Williams. Paper and Print 28, No. 4, Winter 1955, pp. 434, 435, 437, 438, 439, 440, 441, 465 (8 pages). This full length article describes the field of adhesives from the user's point of view. In easily understood terms the article describes: the theory of adhesion, type of adhesives, recent progress, composition of adhesives, animal glue, natural gums, synthetic resins, silicones, rubber adhesives, and adhesive power.

THERE'S NO MYSTERY ABOUT IT! LEARN HOW TO HANDLE GUMMED PAPERS. H. A. Schlater. The Inland Printer 136, No. 4, January, 1956, pp. 46-47 (2 pages). This is the first of two articles about gummed papers. The main steps in gumming paper are described and the importance of selecting proper paper and gums to fit the end use is discussed. Helpful measures are presented for the printer to handle gummed papers with a minimum of trouble.

HOW TO HANDLE, STORE AND PRINT GUMMED PAPERS. H. A. Schlater. The Inland Printer 136, No. 5, February, 1956, pp. 52, 53, 79 (3 pages). This is the second of two articles on gummed papers. The following topics are discussed: Preparing gummed stock for press through proper cutting, controlling humidity, fanning of stock and avoiding burrs on paper. A number of precautions are given for printing gummed papers by offset without trouble.

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LITHOGRAPHIC ABSTRACTS

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LITHOGRAPHIC ABSTRACTS - MAY, 1956

PHOTOGRAPHY, TONE AND COLOR CORRECTION

SETTING UP EXERCISES. Stanley Goldsmith. American Printer & Lithographer 137, No. 2, Feb. 1956, pp 40 and 41 (2 pages). When a new camera is installed there are a number of things to check before it is used in production. Tests are given for checking, color correction of the lens, squareness of camera (i.e.) are copyboard, lens, and camera back perpendicular to the camera bed, focusing tapes, and the difference between the position of the vacuum back and plate holder. If the camera isn't right, make it right. The camera is the one place where all the work starts and if it is wrong when it leaves there, then the entire job is wrong.

ELIMINATING HAND STRIPPING ON LINE-HALFTONE COMBINATIONS. Otto C. Stoessel, Jr. The National Lithographer 63, No. 2, Feb. 1956, pp. 26, 27, 28 (3 pages). A method of combining line and halftone work on one piece of film is described. The system was worked out by the Air Force, and is used in producing mosaics in 1/2 tone and contour lines as a line shot. The system requires an auxiliary transparent camera back. A negative of the line work is made and then a contact positive. A system of double exposure is employed to produce solid contour lines while producing a 1/2 tone image.

ALPHABET EVOLUTION. J. S. Mertle. The National Lithographer 63, No. 2, Feb. 1956, pp. 34 and 35. The evolution of the alphabet is traced from ancient times to its present form. Colored filters were in use before color-sensitized films were introduced. Various forms of colored filters have been used over the years; these were colored glass, dyed fabric, colored solutions in glass cells and dyed gelatin or plastics. The Neugebauer Equations which were once thought to give a complete picture of what happens when colored inks are printed on paper have been called obsolete by Hanns Neugebauer himself. He suggests an empirical and more embracive approach to the problem of studying color reproductions.

A NEW TWIST ON AN OLD METHOD. Ralph F. Jentile. The National Lithographer 63, No. 2, Feb. 1956, pp 29 (1 page). A simple procedure for re-screening halftone copy is described. A simple device gives the screen angle of the halftone copy. Markers are drawn along the straight edges of the device. These 2 lines are then placed parallel to the vertical line of the copyboard. The copy is then screened as regular copy and the resulting moire patterns will appear as an acceptable rosette pattern.

TROUBLE IN THE CONTACT ROOM - HOW TO AVOID IT. John Pince. The National Lithographer 63, No. 2, Feb. 1956, pp. 48 and 49 (2 pages). Some of the problems encountered in making photographic contacts, and their possible solutions are discussed. Procedures to be used when making contacts, or checking equipment are given. These techniques will produce good contacts from negatives containing 500 lines to the inch.

THE OPTICAL AND PHOTOGRAPHIC CHARACTERISTICS OF THE PHOTON MACHINE. R. A. Higonnet, L. Moyroud, and L. Rosenblum. Photographic Science and Technique, Series II, Vol. 3, No. 1, Feb. 1956 pp. 7, 8, 9, 10 (4 pages). The Photon machine is described as a type-composing machine which produces optical images on photographic materials from which mechanical printing plates can be made. A brief description is given of the photographic and optical principles involved and the electrical and mechanical provisions for producing desired type size, type style, line length, line spacing, automatic justification, and a variety of spacing designs.

PLANOGRAPHIC PRINTING PROCESSES

*THE PRINTING PLATE OF THE OFFSET PRINTER, I AND II. Anon. Fachberater Eggen, Vol. 6, No. 49, June 1955, pp. 78-80; No. 50, July 1955, pp. 84-5 (In German) (Graphische Anstalt-Hanns Eggen, Hannover, Germany); Printing Abstracts 10, No. 12, December 1955, p. 762. A survey is given of the various types of planographic printing plates known at the present time, with particular reference to stone, stone-surfaced, aluminum, Eloxal, metallised board, zinc, bimetallic (zinc-copper,

aluminum-copper, steel-copper, brass-steel, brass-nickel, copper-chromium and copper-lead) and tri-metallic (zinc-copper-chromium and steel-copper-chromium) plates. The tri-metallic plates offer the greatest prospects of success.

*THE USE OF POLYVINYL ALCOHOL IN MODERN OFFSET PROCESSES. Anon. Graf. Tijdschrift; Offset, Vol. 10, No. 20, 8 Oct. 1955, pp. 348-9 (In Dutch). Printing Abstracts 11, No. 1, January 1956, p. 38. The use of dichromated polyvinyl alcohol instead of other dichromated colloids when a large number of copies is required is advocated because it keeps better.

*THE DEFORMABILITY OF ANODICALLY OXIDIZED PURE ALUMINUM. W. Kohler. Werkstoffe u. Korrosion, 6, 1955, pp. 169-80; Chem. Abstr. 49, No. 19, 10 Oct. 1955, Col. 12994; Printing Abstracts 11, No. 1, January 1956, p. 38. The effect of various coating methods on the deformability of anodically oxidized aluminum, and the tendency of the oxide layers to crack under tensile and deepening wear, were studied by means of numerous tests. Anodically produced oxide layers in combination with the Duffek colouring method were found to be a valuable aid in detecting local areas of tension in mechanically stressed parts made of light metal.

*A CRITICAL COMPARISON OF ALUMINUM COATING METHODS. G. T. Sink. Light Metal Age 13, Oct. 1955, p. 20-23, 35; Battelle Technical Review 5, No. 1, January 1956, p. 7a. Discusses and compares seven systems; two Iridite, two Alodine, chromic acid and sulfuric acid anodizing, and hard oxide coating. Photographs, graph, tables.

PAPER AND INK

INK MISTING AND ITS PREVENTION. Andries Voet. American Ink Maker 34, No. 2, Feb. 1956, pp. 32, 33, 34 (3 pages). This article presents the work of Andries Voet of the J. M. Huber Corporation in his study of ink misting. The experimental apparatus used is described. The distribution of misting in space around the rollers and variation of amount with time is reported. The influence of speed,

roller slippage, quantity of ink, ink tack, and electrical conductivity were studied. The discussion presents theoretical considerations to explain the observations reported.

MODERN RESEARCH ON PRINTING INK DRIERS. D. Tollenaar. I.G.T. Nieuws, 8, No. 7, July 1955, pp. 98-102 (5 pages). Printing Abstracts 11, No. 1, January 1956, p. 6. This report by Dr. Tollenaar to members of the Technical Commission of the Koninklijke Nederlandse Bond Van Steen- en Offsetdrukkerijen en Fotolithografische Inrichtingen covers research carried out since 1937 in several countries on the above subject.

*PRINTING INK AND PAPER. W. Fuhler. Wochenbl. Papierfabr. (Guntter-Staib Verlag, Biberach and der Riss, Germany), Vol. 83, No. 2, end Jan. 1955, pp. 43-6; No. 3, middle Feb. 1955, pp. 79-81 (In German) (D390/13,646); Printing Abstracts 11, No. 1, January 1956, p. 4. A general account is given of the drying of inks, with particular reference to the effect of paper acidity and R. H. on ink drying, the penetration of inks, and scratch and rub proofness.

DRYING AND EMULSIFICATION OF OFFSET INKS. W. Fuhler. Polygraph, Vol. 8, No. 20, 20 Oct. 1955, pp. 805-7 (3 pages) (In German); Printing Abstracts 11, No. 1, January 1956, p. 4. The effects which emulsified inks may have on the plates and the print are discussed and measures to prevent emulsification outlined.

*INTERPRETATION AND MEASUREMENT OF CONTACT ANGLES OF WATER ON PAPER. E. Back and B. Lundin. Svensk PappTidn., Vol. 58, No. 20, 31 Oct. 1955, pp. 758-63 (in Swedish); Printing Abstracts 11, No. 1, January 1956, p. 9 and 10. A review is given of recent theoretical approaches and measurements of contact angles on rough surfaces and on non-homogeneous (mixed) surfaces built up of several different chemical components. From this background contact angles of water on paper surfaces are discussed. The surface of a sized paper is considered as rough and built up of surface areas of hydrophobic rosin or aluminum resinates mixed with surface areas of hydrophilic and water-absorbent cellulose. Although the interpretation of

contact angles on such a surface is difficult, apparent contact angles of water on a paper surface represent a definite surface property, as far as the paper surface is sufficiently well sized to permit the water absorption to be neglected during a contact period of 10 sec. necessary for measurement. Precautions and details of measurements are discussed. An improved apparatus is described. Data are given showing increasing standard deviation with decreasing apparent contact angle.

*STUDIES ON THE FIXED ACIDITY OF PAPERS. R. Seve, and J. Pouradier. Ass. Tech. Ind. Pap. Bull., No. 4-5, 1955, pp. 143-59 (In French); Printing Abstracts 11, No. 1, January 1956, p. 15. The pH of extracts was studied under various experimental conditions, particularly by water extraction methods. The value for the pH varies according to the method of extraction; even for the same method of extraction, the pH was dependent on the concentration of paper in the extract. Since the pH is not a sufficient characteristic of paper, the acidity of the extracts was determined. An attempt was made to explain the observed facts and to connect them with one another and with the properties of aluminum salts in solution. The elements of a method for determining the total fixed acidity of a paper are given.

*PICK TESTER. U. S. Patent 2,705,424. John Waldron Corp. and A. W. Pomper. Off. Gaz. U. S. Pat. Off., Vol. 693, No. 1, 5 Apr. 1955, p. 34; Printing Abstracts 10, No. 8, August 1955, p. 457. A pick tester comprises means for subjecting successive areas of a sample of the material to constant pressure printing with an ink of constant tack, means for maintaining the ink at constant temperature, and means for accelerating the speed of printing for each successive area to a final speed beyond that at which picking occurs, and at which the printing on the final area of the succession is unsatisfactory, whereby the speed of the area which shows evidence of pick is an index of the pick characteristic of the material.

LITHOGRAPHY - GENERAL

pH CONTROL - IS IT WORTH WHILE? Oscar Diehl. The National Lithographer 63, No. 2, Feb. 1956, pp. 44 and 45 (2 pages). pH should be called, as it deserves, "proper handling." The differences in opinion about the application of pH have much to do with the lack of its 100% acceptance. A few points are cleared up in this article by lessons learned over many years in the "College of Hard Knocks." Some interesting and revealing tests are described. Experienced pressmen no doubt can grope along with guess work and depending on past knowledge. However, many a plate can be ruined, much hard feeling created between pressroom and plate department, and a lot of inferior jobs result, from the lack of pH control.

*OFFSET PRINTING-MACHINES. Brit. Pat. 737,988, Color Metal Akt.-Ges. appl. 30 Dec. 1953, publ. 5 Oct. 1955; Pat. Abstr. J. No. 3469, 5 Oct. 1955, p. 15A; Printing Abstracts 10, No. 12, December 1955, pp. 742. A damping device for an offset printing machine includes roller(s) in contact with the cylinder of the machine, a distributor roller, a rotating ductor, and a reservoir. In the ductor, brushes are disposed parallel to the axis of rotation to form several rows. The brushes are removable in order to adjust their number for varying the amount of damping medium fed from the reservoir to the cylinder.

HOW TO PREVENT AND CURE LITHO PLATE SCUMMING. C. W. Latham. American Printer and Lithographer 136, No. 9, Sept. 1955, pp. 34, 36, 38, 40 (4 pages). Printing Abstracts 10, No. 12, December 1955, p. 762. Notes on desensitizing and gumming the plate, the machine run, etching on the press and fountain solutions are given.

GRAPHIC ARTS - GENERAL

*CORROSION OF ALUMINUM IN CONTACT WITH PAPER. T. H. Angel. Proc. Tech. Sect. Brit. Pap. Bd. Mkrs' Ass. (Dob.6.1/13,493); Printing Abstracts 10, No. 12, December 1955, pp. 732. Annealed aluminum foil is more resistant to corrosion at the sides of the sheet than at the centre. Chlorides are the compounds most corrosive to aluminum which are normally found in paper.

SAFETY PROGRAMS - WHAT MANAGEMENT EXPECTS OF THEM. Oliver R. Sperry. The National Lithographer 62, No. 12, December 1955, pp. 26, 27, 28 (3 pages). The answer to this is "Profitable Results" for all concerned. Basic emphasis of a Safety Program is on saving lost-time, physical suffering, loss of limb, and loss of life. By continually reducing the frequency of accidents, it should be possible to eliminate them. The standard for a Safety Program should be perfection. Continuous work on "frequency" automatically reduces "severity." The Safety Program has the right to expect management backing with disciplinary action, if necessary, and recognition of the importance of continuous effort with new approaches.

SWEDISH INVENT PAPER CONTROL DEVICE FOR SHEET-FED PRESSES. Printing World 158, No. 6, Feb. 8, 1956, pp. 113 (1 page). A new Swedish device, The "Nivetron," which automatically controls the passage of the paper in sheet-fed printing presses has recently been put on the market by the Stockholm firm of AB Inventing. It is claimed that this invention is the first one to solve satisfactorily this old problem of the printing trade. A licence agreement for Great Britain has recently been concluded with J. F. Crosfield Ltd., of 2 Elthorne Road, London N19. Designed by the experts of the Swedish firm, the apparatus performs six essential control functions in the course of the printing process. Its controls ensure that only one sheet at a time is fed into the press; that sheets with folded corners cannot pass; that the sheets receive their correct position laterally; that no sheet fails to pass through or accidentally gets below the front lay and, finally, that the sheets do not become misshapen on their way between the cylinder and the stripper fingers.

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LITHOGRAPHIC ABSTRACTS - JUNE, 1956

PHOTOGRAPHY, TONE AND COLOR CORRECTION

*APPARATUS FOR COLOR SEPARATION. U. S. Pat. 2,736,229. William C. Huebner. Official Gazette 703, No. 4, Feb. 28, 1956, p. 721-722. Application 9/6/52. An apparatus for illuminating copy which is to be reproduced in a plurality of separate preselected colors, comprising a first source of substantially white light, a first means for separating the light from said source into its spectrum, means supporting said first means in a position for directing the spectrum upon the copy to be reproduced, a second source of substantially white light, a second means for separating the light from said second source into its spectrum, means supporting said second light separating means in a position for directing the said second mentioned spectrum upon said copy in inverse order to that of the first spectrum and superposed thereon, means to adjust one of said light separating means relative to the other to thereby secure superposition of said selected portions of the two spectra, separate masking means intermediate each of said light separating means and said copy for selectively masking all but a selected band of the corresponding spectrum, and means for producing relative movement between said copy and said light separating means in a direction parallel with said surface while maintaining the said light separating means in predetermined spaced relationship, whereby the copy is scanned by a continuous band of preselected colored light having substantially uniform characteristics throughout its width.

*PHOTOGRAPHIC COMPOSING APPARATUS. U. S. Pat. 2,736,249. Rene Higgonet and Louis M. Moyroud (to Graphic Arts Research Foundation, Inc.). Official Gazette 703, No. 4, February 28, 1956, p. 727. Application 1/30/52. Photographic composing apparatus comprising a carrier including two disks in rigid relationship, one disk bearing the characters to be photographed and the other disk bearing a number of apertures, each in precise angular relation

to a corresponding character about a given axis, a source of light in position to illuminate an aperture, an optical system to receive the light from the illuminated aperture and to direct an image of the aperture toward its corresponding character to form a partial image of the character, projection means to focus the partial image upon a sensitive material, and mechanism for rotating the disks continuously relative to the source of light, optical system and projection means, and about said axis, whereby the image of the aperture moves progressively across the character and the entire image of the character is projected.

VARIABLE RESPONSE UNIT. S. W. Levine and R. N. Hotchkiss. Printing Equipment Engineer 86, No. 9, June 1956, pp. 65, 68, 69, 128, 129 (5 pages). This unit is an accessory for the Scan-A-Graver. The operation is described, and the illustrations show how tonal qualities can be modified so as to get plates which print better in highlight, shadow, or mid-range tone values.

QUALITY IN OFFSET LITHOGRAPHY. Bruce E. Tory. Share Your Knowledge Review 37, No. 7, April 1956, pp. 11, 12, 13, 14 (4 pages). The author discusses some of the factors which influence the quality of lithographic prints. Included in the discussion are objective and subjective tone reproduction, dot sharpness, ink spread, and the evaluation of tone reproduction.

FUNDAMENTALS OF COLOUR. J. M. Adams. Paint Manufacture 26, No. 4, April 1956, pp. 105-111 (7 pages). Colour, and its measurement and specification, involves concepts from several branches of science. The properties of an object that determine its colour are physical, although they may be due to the chemical composition of the object. Furthermore the sensation of colour depends also on the light illuminating the object and on the physiology of the observer, while the visual appearance of the object - the color perceived by the observer - may be influenced by psychological factors such as contrast.

The work which has been done on the measurement and standardization of colour, in spite of this diversity of influences, is considerable and the principles used are outlined here.

PLANOGRAPHIC PRINTING PROCESSES

*PRINTING PLATES. U. S. Pat. 2,732,796. Date of application 5/17/51. Charles H. VanDusen, Jr. (to Addressograph-Multigraph Corp.). Official Gazette 702, No. 5, Jan. 31, 1956, p. 1029. In a metallic lithographic printing plate selected from the group consisting of zinc and aluminum having a pitted and grained obverse surface to provide water-retaining reservoirs and image-retaining apices, a thin water-insoluble film united with an overlying completely said surface configuration and which consists of an insoluble silicate that is the reaction product of the metal of the plate and a water soluble alkali silicate selected from the group consisting of sodium and potassium, and which film is afforded by treating the pitted and grained surface of the plate with a water solution of said soluble alkali silicate in which the alkali silicate concentration lies within the range of from 0.1% to 5% by weight and the excess of which is rinsed away with water so as to leave on said surface only said reaction product in film form of molecular dimension preserving the essential pitted and grained surface configuration of the plate.

*IMPROVED PROCESS FOR LITHOGRAPHIC PRINTING. British Patent 743,278. Applicants: Kodak Ltd., Kingsway, London, W. C. 2. Tin-Printer and Box Maker 32, No. 376, May, 1956, p. 12. In making an ink-accepting image layer for lithographic printing there is exposed to an image a layer of casein lying on a support whose surface is, or can be made, sufficiently hydrophilic to be ink-refusing when wetted with water. The unexposed portions are washed away to reveal the surface of the support in the unexposed areas. The exposed areas of the casein are rendered more ink-accepting by hardening them with a

solution of a salt containing aluminum, chromium, manganese, vanadium or molybdenum, or with an organic hardener.

A METHOD FOR COMPARING THE RELATIVE LITHOGRAPHIC DESENSITISING STRENGTHS OF SOME WATER-SOLUBLE MATERIALS. R. A. C. Adams (PATRA). International Bulletin, No. 73, January, 1956, pp. 30-36 (7 pages). Comparison of the various desensitising materials was made by using a split fountain, dampening rollers and inking rollers. Maintaining the same machine settings, the concentration of desensitising material in one half of the split fountain was consecutively lowered until scumming occurred simultaneously with the half of the plate being dampened with distilled water only. This allowed a limiting minimum concentration (L.M.C.) figure to be obtained for each of the desensitizers evaluated. Polymeric materials, low molecular weight materials and wetting agents were evaluated for zinc and aluminum. Certain conclusions on the action of carboxyl and hydroxyl functional groups in the desensitizing molecule were suggested.

*PHOTOGRAPHIC COPYING PROCESS. U. S. Patent 2,704,712. Eastman Kodak Co. and A. E. Jackson. Print. Equipm. Engr. Vol. 85, No. 9, June, 1955, p. 108; Printing Abstracts 10, No. 10, October, 1955, p. 620. Applicable to the production of offset printing plates, the process comprises transferring a line or halftone on a first support by contact to a second support after the gelatin comprising the complementary image has been hardened in a tanning developer.

*LITHO PRINTING MACHINES. Brit. Pat. 734,510, appl. 7 May 1952, publ. 3 Aug. 1955; Faber & Schleicher. Pat. Abstr. J., No. 3460, 3 Aug. 1955, p. 7A; Printing Abstracts 10, No. 10, October, 1955, p. 599. Printing cylinders or plates are moistened by liquid ejected by compressed air passing through a movable, partly submerged liquid carrier, a shield being arranged between the air nozzle and surface to be moistened. The shield is parallel to the axis of

the cylinder, and relative movement between nozzle and shield is controlled to interrupt periodically the stream of liquid directed against the cylinder.

*STABILIZATION OF PHOTOTHERMOGRAPHIC PRINTS. U. S. Pat. 2,732,304, Appl. 10/15/53. Waldemar Vanselow and John A. Leermakers (to Eastman Kodak Co.). Official Gazette 702, No. 4, January 24, 1956, p. 890. A stabilized heat developable photosensitive element comprising a support, a sensitive colloid layer thereon including as its primary photosensitive constituent a metal oxalate selected from the group consisting of silver oxalate and mercurous oxalate and a protective overcoating on the colloid containing a compound selected from the group consisting of polyvinyl butyral, polyvinyl alcohol, sugars, salicylaldehyde, piperonal acetophenone, benzoylacetone, diacetyl, and ethylene glycol monoethyl ether.

PAPER AND INK

MEASUREMENTS OF INK TRANSFER IN THE PRINTING OF COATED PAPERS. J. M. Fetsko and W. C. Walker. New Engl. Print. Lithogr., May, 1955, pp. 36, 38; Amer. Ink Mkr., Vol. 33, No. 7, July, 1955, p. 38; Printing Abstracts 10, No. 10, October, 1955, p. 584. Using reproducible laboratory printing techniques, studies were made of the effect of major printing variables on ink transfer and print quality in the letterpress printing of black solids. The effects of printing pressure, printing speed, and ink film thickness were investigated with three oil-based inks on four different coated papers. When O/O ink transfer was plotted against amount of ink carried on the plate, a characteristic curve resulted. As the ink film thickness on the plate increased, the O/O transfer rose very rapidly from the origin, reached a maximum, and decreased again to approach a constant value. With the inks and coated papers used in these studies, the amount of ink required to produce a fully covered print always occurred after the peak of the transfer curve. Both the position of the transfer curve and this minimum practical film thickness

were found to be dependent on printing pressure and speed and on the ink and paper properties.

*PROBLEMS OF PRINTABILITY. E. Rupp. Arch. Druck Pap., Vol. 1, No. 2, 1955, pp. 166-74 (in English and German); Printing Abstracts 10, No. 10, October, 1955, p. 592. The relation of smoothness, elastoplastic properties, homogeneity of the paper, particularly in regard to thickness, smoothness and elastioplastic behaviour, dimensional stability, fluffing, opacity and picking to the printability of paper is briefly discussed. Next the construction of a model printing machine is discussed: one model can be used for letterpress and offset printing, while photogravure requires a special model for itself. Four types of printability testers are known, namely the Hercules, I.G.T., Fogra and Institut fur grafische Technik, Leipzig, instruments. The ink transfer on four different printing papers was investigated and it was found that the ink transfer is of the same order for offset as for letterpress printing, namely 50%. A fuller report on this work will be published later.

THE CHEMICAL ANALYSIS OF PAPER. B. L. Browning. TAPPI 39, No. 1, January, 1956, pp. 161A-177A (17 pages). A survey of literature and methods involving the chemical analysis of paper are given. Three hundred and sixteen references are listed and significant notes are presented on tests which include: sampling, moisture, fiber quality, sizing and coating, acidity of paper, inorganic residues, coloring matter, biological control agents, synthetic resins, synthetic and natural rubbers, polysaccharides and gums, softeners and humectants, specks and spots and specialty papers.

HOT AIR AND INFRA-RED DRYING OF PRINTING INKS. H. Frank. Polygraph 8, No. 12, 20 June 1955, pp. 460-461 (In German); Printing Abstracts 10, No. 10, October, 1955, p. 584. Infra-red drying is briefly explained, and the cases where it is possible to speed up drying by means of heat are discussed.

*SYNTHETIC VEHICLES FOR PRINTING INKS. French Patent 984,220. Omnium Marocain deBrevets d'Invention. Chem. Abstr. 49, No. 14, 25 July 1955, col. 9940; Printing Abstracts 10, No. 10, October, 1955, p. 585. Synthetic vehicles for printing inks comprise a vegetable and (or) a mineral oil to which is added a solvent, lead, cobalt or manganese drier, and a phenol-formaldehyde, glycerophthalate, or maleic acid resin. An example is given of an ink prepared by heating together with stirring vegetable oil, synthetic resin, plasticizer, mineral oil, chlorinated solvent, a drier fatty material, and white soap. The ink can be thinned to the desired viscosity with more vegetable oil.

*THE FLOW BEHAVIOUR OF PRINTING INKS. R. Walter. Dtsch Farben-Z., Vol. 9, No. 7, July, 1955, pp. 258-60 (In German); Printing Abstracts 10, No. 10, October, 1955, p. 586. There are three main factors which determine the flow properties of a printing ink; viscosity, tack and length (shortness). The significance of the following terms used in connection with the viscometry of substances having properties like those of printing inks is indicated: Newtonian liquids, thixotropy, ideal-plastic, plastic and pseudo-plastic. The viscosity of thixotropic materials such as inks can be determined with a torsion viscometer. By tack is meant the resistance of ink film to detachment (splitting). When a viscous substance such as ink is subjected to a shearing force, threads are formed, their length depending on the speed of the rollers. Hence inks which have a correct tack at low speeds may be too tacky for high speeds and may eventually produce picking. Tack is particularly important in wet colour printing. The energy required to split off the ink on rollers is made up of the energy required to form the threads and the surface energy required to break them.

*FIRST COMMERCIAL RUN OF NYLON SYNTHETIC PAPER. Anon. World's Pap. Tr. Rev., Vol. 144, No. 6, 11 Aug. 1955, p. 460; Printing Abstracts 10, No. 10, October, 1955, p. 586. An experimental run of nylon paper was made on a standard Fourdrinier paper machine at the Warren, N. J. plant of the Riegel Paper Corp. The synthetic nylon paper was almost impossible to tear by hand. The high strength suggests its use in heavy duty bags; its stability to moisture indicates possible use in map and tracing papers and for important records and documents where permanence is necessary. Its resistance to chemical attack would be useful in filtration of corrosive liquids and packaging chemicals. At present, the cost of making paper from nylon is considerably higher than from rags or wood pulps. As development proceeds to production, costs can be expected to decrease.

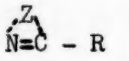
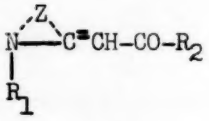
*SUTHERLAND DEVELOPS SIMPLE GAUGE TO TEST CURL OF PAPERBOARD STOCK. Anon. Boxbd. Contain., Vol. 73, No. 752, Aug. 1955, p. 34; Printing Abstracts 10, No. 10, October, 1955. p. 588. This portable instrument can be used either for production control or in the laboratory. A four-in. square sample of the board stock, which has been cut with two sides of the square parallel to the axis of curvature, is inserted in a metal clamp on the measuring device. With the axis of curvature placed perpendicular to the gauge face, the curl of the stock will be silhouetted against the graduated background. The reading of the face of the gauge gives the radius of curl in in. for the sample. (Sutherland Paper Co., Kalamazoo, Michigan).

LITHOGRAPHY - GENERAL

*MACHINE FOR FEEDING AND TREATING LITHOGRAPHIC ADDRESS PRINTING PLATES. U. S. Patent 2,731, 910; Application 8/28/52. John H. Gruver (to Addressograph-Multigraph Corp.). Official Gazette 702, No. 4, January 24, 1956. p. 791. In a printing machine through which a series of individual printing devices each bearing a lithographically reproducible image may be passed one by one,

a printing device carriage for transporting a plurality of spaced printing devices through the machine, a supply magazine adapted to hold a supply of such printing devices, means for withdrawing printing devices one by one from the supply magazine and feeding such printing devices to the carriage in succession, driving means operable to drive the printing device carriage at a constant speed in a predetermined direction, the speed of the withdrawing means corresponding to the speed of the carriage, rotating means disposed at respective points along the path of the printing device carriage adapted to clean and moisten the surface of each printing device, rotating means disposed at another point along the path of the printing device carriage and operable to apply ink to the image bearing surface of each printing device after the same has been cleaned and moistened, a rotating blanket disposed at a point along the path of the printing device carriage and defining a transfer station at which the blanket is adapted to make a rolling contact with the image bearing surface of each printing device as such printing device is advanced beyond the inking means by said carriage, a platen means associated with the blanket and defining a printing station at which the platen means may press an advancing sheet to be printed against the blanket to effect ink transfer from such blanket on to such sheet, a blanket cleaning means operating on the blanket between the printing station and the transfer station whereby the blanket may be cleaned after printing is effected and before a new image is off-set on to the blanket, a preservative applying means disposed at a point along the path of the printing device carriage and operable to apply a coating of preservative to each printing device after the same has passed beyond the transfer station, and a collecting magazine in position to receive the printing devices after the same have been operated on by the preservative applying means and removed from the carriage by the withdrawing means.

FEATURES OF PRESENSITIZED OFFSET PLATES. Bernard Cohn. Offset Duplicator Review 6, No. 3, March, 1956, pp. 9, 11 (2 pages). Article compares the use of presensitized plates with the conventional albumen coating on zinc.

*PHOTOSENSITIZATION OF POLYMERS CONTAINING CINNAMOYL GROUPS. U. S. Pat. 2,732,301. Application 10/15/52. Earl M. Robertson and William West (to Eastman Kodak Co.). Official Gazette 702, No. 4, January 24, 1956. p. 890. A photomechanical resist composition comprising as a combined carrier and light-sensitive material an organic solvent soluble polymeric material selected from the class consisting of cinnamic acid esters of polyvinyl alcohol, cinnamic acid esters of cellulose, cinnamic acid esters of hydroxyalkyl-celluloses, benzal - ar - vinylacetophenone polymers, and cinnamalvinyl ketone polymers, and as a light sensitizing agent for the polymeric material a member of the class consisting of (1) compounds having the general formula  wherein Z represents the non-metallic atoms necessary to complete a thiazole nucleus and R represents a member of the class consisting of hydrogen, aryl, alkyl and alkylidene groups, (2) compounds having the general formula  wherein Z represents the atoms necessary to complete thiazole and selenazole nuclei, R_1 represents a member of the class consisting of hydrogen, alkyl and mononuclear aryl groups, and quaternary nitrogen salts of said compounds, and (3) cyanine dyes derived from thiazoles, benzothiazoles, benzoselenazoles, naphthathiazoles and benzoxazoles.

VINYL PRINTING. Gabriel Goldstein. Gravure 2, No. 4, April, 1956, pp. 28 and 72 (2 pages). This is the second of two articles on vinyl printing. The pigments generally favored for vinyl printing and their requirements are discussed. The more important requirements are: freedom from bleeding (defined

as solubility of pigment or pigment solvent with vinyl film components), blocking or sticking of printed ink to vinyl film, and resistance to light. Other properties not always necessary but significant are: resistance to arcing (in heat sealing), resistance to acids or alkalai, dispersibility of pigments, and resistance to hydrogen sulfide. A list of pigments suitable for vinyl printing is given.

GRAPHIC ARTS - GENERAL

*CONTINUOUS DIRECT ELECTROPHOTOGRAPHIC RECORDER. U. S. Pat. 2,732,775. Application 2/11/53. Charles J. Young and Roger G. Olden (to Radio Corp. of America). Official Gazette 702, No. 5, Jan. 31, 1956, p. 1024. A continuous direct electrophotographic recorder comprising, in combination, means for feeding a continuous web of material having a photoconductive surface along a predetermined path, electrostatic charging means for applying an electrostatic charge to said surface, means for exposing said electrostatically charged surface to a light image to produce a latent electrostatic image on said surface, means for developing said latent image and means for fixing said developed image, and said developing means comprising an electroscopic developing powder cloud generating means including, a hollow cylinder mounted for rotation about its longitudinal axis, said cylinder having alternate rows of perforations and of strips of brush-like material, a hopper positioned within said cylinder for carrying and dispensing a quantity of developer powder, said powder being applied through said perforations to said brush-like material, and means for causing said brush-like material to project said powder into space to form a cloud.

USES OF ELECTRONICS IN GRAPHIC ARTS INDUSTRY - Part V - ELECTRONIC ENGRAVING. Francis A. Westbrook. Printing Equipment Engineer 86, No. 9, June, 1956, pp. 76, 78 (2 pages). The Fairchild Scan-A-Graver is described. This unit can make a plastic plate size 8" x 10" in 65 or 85 line screen,

from same-size copy. A smaller model, the Cadet, for 6" x 8" is available for smaller newspapers. There is a special model, the Tandem, for turning out duplicate plates for jobs which are to be printed two up. Two new units are under development, the Scan-A-Sizer for changing the size, and the Variable Response Unit, for making changes in highlights and tone values. The operator's skill is still an important factor in obtaining best results, but these machines can reduce operating costs.

NEGATIVE-TO-POSITIVE XEROGRAPHY. R. E. Hayford and W. E. Bixby. Battelle Tech. Rev. 4, No. 7, July, 1955, pp. 89-90 (2 pages); Printing Abstracts 10, No. 10, October, 1955, p. 616. A process for preparing a positive xerograph print from an ordinary photographic negative has been developed by the Haloid Co. and the Battelle Memorial Institute for the U. S. Army Signal Corps. The xerographic process can be modified to give reversal development by altering the electrical field above the xerographic plate during the development process. The alteration can be achieved by using an electrode placed adjacent to the plate and maintained at suitable potential. The amount of potential to be applied is determined by the specific image being processed. By proper adjustment of this potential, xerography can be made to function as a positive-to-negative or as a negative-to-positive process, and it is therefore applicable to photo-finishing operations.

MEASUREMENT OF GRAVURE CELLS AND OTHER PRINTING SURFACES. Theo. Hommel. Gravure 2, No. 3, March, 1956, pp. 21, 22, 50 (3 pages). The American Optical Company's optical depth gauges are designed to measure depth and width of lines, dots, gravure ink cells and lithographic plate grains. They have bases which may be used on curved surfaces and measure depth to 0.0001 inch. Article describes use of optical depth gauge and contains several good photomicrographs of gravure cells.

USES OF ELECTRONICS IN GRAPHIC ARTS INDUSTRY - Part III. Francis A. Westbrook. Printing Equipment Engineer 86, No. 7, April, 1956, pp. 69, 70, 72, and 86 (4 pages). Automatic electronic controls are described for maintaining accurate register in the use of preprinted web-fed material for labeling, making envelopes, and making and filling bags or wrappers. The feed is automatically corrected so as to maintain register for the cut-off knife. From 7000 to 9000 packages per hour can be produced. Photoelectric transmission and reflexion densitometers for color and tone control, and the pH meter are also discussed.

*PHOTOGRAPHIC REPRODUCTION ON ALUMINUM. Metallwarenindustrie und Galvanotechnik 45, No. 3, pp. 124-125; Metal Finishing 54, No. 3, March, 1956, pp. 76. The article discusses the process and gives formulas for solutions to be used. Pre-treatment (cleaning), anodizing, impregnation (silver nitrate), exposure, and development.

*METHOD OF PRODUCING A PHOTOGRAPH ON GLASS. U. S. Pat. 2,732,298. Application date 12/5/52. Stanley Donald Stookey (to Corning Glass Works). Official Gazette 702, No. 4, January 24, 1956, p. 889. The method of producing a permanent two-dimensional photographic image within the surface of a silicate glass containing an alkali metal oxide, which comprises forming on such surface a chemically fixed, photographic image comprising silver, and heating the glass together with the image in the presence of air containing up to 25% by volume of SO_2 at a temperature between about 125° C. below the strain point of the glass and just below its softening point for a time sufficient to oxidize and ionize the silver and to cause migration of silver ions into the glass.

USES OF ELECTRONICS IN GRAPHIC ARTS INDUSTRY - Part IV - LIGHT INTEGRATORS. Francis A. Westbrook. Printing Equipment Engineer 86, No. 8, May, 1956. pp. 31 and 34 (2 pages). Inaccurate exposures can only be avoided by the use of Light

Integrators. The Luxometer and the Essar are described. These units are easily installed and used for obtaining repeatable exposures with the camera, the printing frame, and with the photocomposing machine. Repeatable exposures to ± 0.03 density are claimed.

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LITHOGRAPHIC ABSTRACTS

Compiled by the Research Department of the

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LITHOGRAPHIC ABSTRACTS - JULY, 1956

PHOTOGRAPHY, TONE AND COLOR CORRECTION

COLOUR-MASKING : Part I : PRELIMINARY CONSIDERATIONS. F. H. Smith. Graphic Arts Focal Point, No. 1, December, 1955, pp. 21-23 (3 pages). The basic principles of additive and subtractive color reproduction are reviewed, and the problems of color correction related to faults of printing inks, pigment or dyes. While masking was formerly considered "helpful" for photo-engraving of drawn originals, it is now practically "essential" for color photographs. The biggest field for inventions to help color lithography is considered to be better masking methods for reversed, direct halftone separations.

SOME STATISTICAL ASPECTS OF COLOR PROCESSING CONTROL. Spencer B. Fulweiler. Photographic Science and Technique - Quarterly, Series II, Vol. 3, No. 2, May, 1956, pp. 33, 34, 35 (3 pages). Profitable color operations require adequate process controls. Statistical methods are applied to controls and it is shown how statistics, gathered over a period of time, are utilized in establishing the basis for the necessary controls.

PLANOGRAPHIC PRINTING PROCESSES

SENSITIVITY OF BICHROMATED COLLOIDS. George W. Jorgensen and Michael H. Bruno. Modern Lithography 24, No. 3, March, 1956, pp. 77, 78, 129, 131, 133 (5 pages). Part I of a review of the sensitivity of bichromated coatings. The following subjects are briefly discussed: The photochemical reaction, the conductivity of unexposed and exposed coatings and the sensitometry of the coatings (including the dark and continuing reactions). Article also appears in the Lithographers Journal 40, No. 12, March, 1956, pp. 12, 13, 14, 15 (4 pages).

A CONTRIBUTION TO THE STUDY OF THE HARDENING OF COLLOIDS BY LIGHT. H. Stiehler. International Bulletin 73, January, 1956, pp. 12, 13, 14, 15 (4 pages). Absorption-spectra of coating solutions and their variations by light are investigated. The spectra are compared with an ammonium-dichromate-solution, reduced in fractions and with the absorption-spectra of copy-layers, and from there conclusions are drawn about the chemical nature of the photo-reactions.

THE PATRA BI-METAL PLATE. Modern Lithographer and Offset Printer, Vol. LII, No. 4, April, 1956, pp. 33-34 (2 pages). Development of bi-metal plate where image areas are copper or brass and non-image areas are nickel phosphide. Advantages are said to be resistance to scumming, corrosion and wear. Disadvantages are inertness of nickel phosphide which means alterations to plate would be difficult and the electroplating equipment which is necessary to produce this plate.

CONTACT ANGLES AND THEIR SIGNIFICANCE IN LITHOGRAPHIC RESEARCH. R. A. C. Adams. International Bulletin, No. 73, January, 1956, pp. 20-23 (4 pages). The contact angles observed in connection with lithographic behaviour of metal surfaces and two liquid phases are discussed. The rising drop and the falling drop procedures were used to secure the data for four tables of data. The time effects, where gum arabic and oleic acid are involved, are dependent upon the nature of the films which form upon the surface of the metal. Such studies can give information on corrosion and adsorption phenomena, associated with lithography.

WHO MAKES PRESENSITIZED PLATES AND WHAT ARE THEY LIKE? (Part II). Modern Lithography 24, No. 3, March, 1956, pp. 44, 45, 46, 47, 135 (5 pages). Survey of the presensitized plates currently being marketed. Companies producing plates are: Azoplate, Harris-Seybold, Minnesota Mining, Ozalid, Remington Rand, S. D. Warren. There is a discussion on each plate separately with a chart correlating characteristics of each.

ARE LITHOGRAPHERS USING PRESENSITIZED PLATES? Modern Lithography 24, No. 2, Feb., 1956, pp. 44-46 (3 pages). Report of a survey of 200 lithographers who answered a 24-question query sent to them on the use and qualities of presensitized plates.

PAPER AND INK

HANDLING AND STORING PAPER IN PRINTING PLANT. Wm. H. Bureau. Printing Equipment Engineer 86, No. 8, May, 1956, pp. 30, 62, 63 (3 pages). This is part I of a two part article. The ability of paper to change dimensions with moisture content is described. Once paper is made and packaged in "water proof" wrappers with the right moisture content the continued proper handling of it is in the printer's hands. Several suggestions are given to help the printer maintain the paper in a distortion-free state before printing. Most important is not to open the paper before it is the same temperature as the pressroom.

WETTABILITY OF LITHO PAPERS BY WATER AND OIL. E. Rupp. International Bulletin, No. 73, January, 1956, pp. 36, 37, 38, and 39 (4 pages). By the drop method (contact angle) an emulsification of oil and water droplets in contact with paper penetrated by either water or oil is observed, and the phenomena of adherence and solidification of the droplets on paper and the displacement of oil by water are studied.

GLOSS IN RELATION TO PAPER AND PRINTING. S. Winn. Paper and Print 29, No. 1, Spring, 1956, pp. 49, 51, 53 (3 pages). A general definition of gloss and its measurement by specularly reflected light-photocell method is described. The gloss of paper can limit the screen sizes most advantageously printed. Super calendered paper will easily handle 100 lines per inch, ordinary coated paper 120 lines per inch and a cast coated sheet 150 lines per inch. Comparisons of final sheet quality are made in terms of ink gloss, paper gloss, and ink color vs gloss.

EMULSIFICATION OF OFFSET INKS. J. H. Bitter. International Bulletin, No. 73, January, 1956 pp. 24-29 (6 pages). The results of study into the emulsification of offset inks and the problem of tinting are presented. Three factors were found to contribute to tinting problems: (1) Paper used, (2) Ink used, and (3) Condition of fountain solution. Tests for correlating the occurrence of tinting and the factors causing it are given. For paper: Surface tension measurements were made on distilled water before and after the paper has been dipped into it for three 10-second periods. For ink: The speed with which an "emulsified" mixture of ink-benzene - distilled water separates and the influence of ink acid number and particle size were determined. For fountain solution: The influence of pH and surface tension were studied.

ROSY OUTLOOK FOR BLUES AND GREENS. R. K. Gitlin. Chemical Engineering 63, No. 5, May, 1956, pp. 138, 140 (2 pages). A brief evaluation of the phthalocynanine pigments, their properties, how they're made, and cost is given. These blue and green pigments have extreme stability, light fastness, and chemical inertness. Phthalocynanine blue's tinting strength is about one and one-half times stronger than iron blues, 15 times stronger than ultramarine and 2-5 times stronger than peacock blues. Phthalocynanine green is the only bright, high strength green known with permanency to light exposure.

PIGMENT PROPERTIES AND PRINTING INK BEHAVIOR. H. Holtzman. American Ink Maker 34, No. 4, April, 1956, pp. 32-37, 67, 69 (8 pages). This paper discusses some fundamental properties of pigments and the important effects these exert on printing ink behavior. Practically all of the ink properties are affected in some way by the pigment, by chemical type, physical form, and its behavior with other materials. The ideal pigment is defined as (a) Bright, clean shade with high strength, (b) Insolubility in all media, (c) Easy mixing and dispersing, (d) Non-reactivity after dispersion, (e) Inertness to light, heat, etc., (f)

Transparency or opacity as needed. The properties studied and reported on in terms of particle size of the pigment are ink shade, body, body vs aging, and dispersion. The use of surfacants to overcome defects of very fine pigment particles had led to such troubles as slow drying, odor problems, and body changes.

LITHOGRAPHY - GENERAL

PRINTING ON COATED STOCK. Reginald F. Wardley. Share Your Knowledge Review 37, No. 8, May, 1956, pp. 7-10 (4 pages). The article tells of a publisher's experience with web-offset printing. The subjects covered include description of press, conventional zinc deep-etch vs long life plates, heat-set inks, paper specifications, lint and foreign bodies, effect of coating on drying rate, blanket hardness vs picking, effect of heaters on moisture content and brittleness of paper, and handling of original advertising copy.

PRINT FOIL SUCCESSFULLY BY OFFSET. Nicholas A. Cook. Paper Film and Foil Converter 30, No. 7, July, 1956, pp. 28-31 (4 pages). A number of conditions and requirements for the successful printing of foil by offset are given. To date only foil laminated to paper or board can be lithographed successfully. For offset the laminated foil is given a prime coat of shellac, nitro-cellulose or vinyl for better ink receptivity. Fine grain plates which carry a minimum of water are recommended. The inks used must have fast setting and drying rates. Printed sheets must be stacked in small piles of 1 to 4 reams.

LONGER RUNS FROM PRE-SENSITIZED PLATES. Jerry M. Greeson. The National Lithographer 63, No. 5, May, 1956, pp. 26, 27 (2 pages). Procedure which is said to triple the press life of pre-sensitized plates is to: (1) Move vacuum frame further from arc lamp (about one and one-quarter the diagonal length of the plate being exposed), (2) overexpose plate to a Sensitivity Guide step of nine or ten solid, (3) Rub plate up with an ink similar to PDI or Triple X, (4) Flush plate in cold water (55°F), and (5) Hold plate in front of arc lamps

for a few minutes after gumming. Plates are said to give runs from 25 to 200 thousand impressions.

A FEW EASY WAYS TO RUIN A BLANKET. Oscar Diehl. The National Lithographer 63, No. 1, January, 1956, pp. 38-39 (2 pages). A description is given on how to make a checkup when using a new blanket. A clean blanket is a fundamental requisite to good printing. Warnings should be heeded about keeping the blanket clean and using the proper solvents. Accumulated dry ink destroys the blanket's resiliency and affinity for accepting the plate image. Every effort should be made to see that press settings are such as to avoid costly mishaps of a mashed blanket.

SOME PHYSICO-CHEMICAL ASPECTS OF LITHOGRAPHY. W. H. Banks. International Bulletin No. 73, January, 1956, pp. 15-19 (5 pages). The physico-chemical aspects discussed include: 1. The nature of metal surfaces in aqueous solutions which may involve anodic or cathodic reaction with various results for the metals used. 2. The wettability of metals by oils in the presence of water. Here the films which various metals carry determine their lithographic behaviour. 3. The consideration that two liquid phases are necessary is discussed briefly. 4. The sensitizing and desensitizing action of dampening solutions. 5. The sensitizing effects of dichromates. 6. Ink/water interface, emulsification. 7. The influence of surface moisture. Some remarks here are that fatty acid (oleic) from oil "wets" or spreads on water and reduces its surface tension; also that the static measurement of contact angles of water drops has little or no bearing on the dynamic values which occur at a nip, which may account for the easy passage of water through a nip. 8. The addition of electrolytes to fountain solution can influence the interfacial tension between oils and water, in one case a tension of 30 dynes drops to almost zero when the pH changes from 5.0 to 9.0.

GRAPHIC ARTS - GENERAL

TECHNIQUES FOR CONTROLLING LABORATORY PRINTING CONDITIONS. Jacqueline M. Fetsko, Wm. C. Walker and Albert C. Zettlemoyer. TAPPI 39, No. 4, April, 1956, pp. 220, 221, 222, 223, 224, 225 (6 pages). Laboratory study of the printing process requires careful control and measurement of such vital variables as printing pressure, speed, and ink film thickness. The techniques for handling these variables are reviewed, and a practical combination for controlled work on a proof press is selected. Static printing pressure is measured with a flexing bridge such as the Huck pressure sensitive base. Correlation of the static pressure with dynamic pressure has been made using strain gages and the Brush strain analyzer. Speed is handled by measuring the time of passage of the cylinder over the plate with an electric stopclock. The method selected for film thickness measurement is direct weighing of the ink on the plate after establishment that resting of the particular ink does not affect results. Use of these techniques in a constant temperature and humidity room has produced highly reproducible results. In other cases dye tracers are put in the ink, extracted from the print and measured in a colorimeter to give the ink film thickness.

CONTROL OF ATMOSPHERIC CONDITIONS IN PRINTING AND CONVERTING PLANTS. Part I - Humidification. F. A. Westbrook. Paper and Print 29, No. 1, Spring, 1956, pp. 59, 61, 63 (3 pages). The air conditioning needs of printers are discussed. It is stressed that since complete air conditioning is expensive many smaller printers may get by with humidification. This article discusses several types of commercial humidifiers using steam and atomization. The second part of this article will deal with "De-Humidification."

FASCINATING LOOK INTO FUTURE COMMUNICATIONS BY PRINTING FIELD. Roswell K. Fisher. Printing Equipment Engineer 86, No. 5, Feb., 1956, pp. 31, 32, 45 (3 pages). Improvements or new methods for typesetting, engraving, platemaking and in the presses themselves are streamlining the graphic arts. Global transmission of copy automatically from punched tape, wire-photo transmission, the Fairchild Scan-A-Graver, and Color-Scanners are examples. As a result of scientific research and development, for instance in problems of ink drying and in folding at increased speed, magazine output may be more than doubled on some presses, within a year. Paper making is making progress in proportion, increasing its output and quality of product.

USES OF ELECTRONICS IN GRAPHIC ARTS INDUSTRY - Part I - PRESS REGISTER CONTROLS. Francis A. Westbrook. Printing Equipment Engineer 86, No. 5, February, 1956, pp. 39, 40, 41 (3 pages). Electronic devices which correct for errors in position of the web or of register marks on the web are discussed. Such devices improve quality and reduce waste. The Champlain Company's Registron and the Hurletron circumferential registration control, made by the Electric Eye Equipment Company are illustrated, and operating features are discussed.

*METHOD OF ELECTROSTATIC ELECTROPHOTOGRAPHY. U. S. Patent 2,693,416 - Filed May 19, 1950. L. B. Butterfield - Assigned to Western Electric Co. Inc. Monthly Abstract Bulletin 41, No. 10, October, 1955, p. 545. The outer surface of a sheet of insulating material is charged while its under-surface is in contact with a photoconductive layer. The outer surface is then exposed to a light image, a suitable powder is applied to the residual charge on the outer surface, and the sheet is removed from the photoconductive layer. The powder is affixed to the sheet of insulating material for example, by heating.

NEW PLASTIC COATING DEVELOPED FOR LITHO - 'Liquid lamination' can be used to coat paper with a high-gloss, colorless finish. Elsa Gidlow. Modern Lithography 24, No. 2, Feb., 1956, pp. 50 and 51 (2 pages). A new process of custom coating for litho and letterpress material, known as the "Marcote Process," has been developed. Vinyl plastic is applied cold as a liquid. The paper with the coating is then subjected to sudden high, infra-red heat and to extreme cold, which hardens the surface. The resulting gloss is claimed to be virtually water, oil and grease proof and scratch resistant. The machine used in the process is franchised to users; it may not be purchased. The Marcote people are exclusive suppliers of the coating material.

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LITHOGRAPHIC ABSTRACTS - SEPTEMBER, 1956

PHOTOGRAPHY, TONE AND COLOR CORRECTION

SOME COMMENTS ON SLIDE RULES AND GUIDES FOR PHOTOGRAPHERS. David B. Eisendrath, Jr. Industrial Photography 5, No. 8, August 1956, pp. 40, 46, 47 (3 pages). The following circular and slide rule calculators are described, including source:

1. Ansco Proportion Scaler
2. ATF Focusing Dial
3. Graphic Proportion Dial
4. Photoengraving Proportion Scale
5. Photographic Slyd-Rule
6. Consolidated Focusing Dial
7. G.W. Photo Slide Rule
8. Kodak Graphic Arts Exposure Computer

Several other similar devices, booklets, and books are mentioned.

EFFECT OF BASE AND EMULSION THICKNESS ON DIMENSIONAL STABILITY OF GRAPHIC ARTS FILMS. John M. Centa. TAGA 1956, Part A pp. 75-79 (5 pages). Dimensional stability of "stable" base films is better than conventional acetate type bases by a factor of 3-5 times, and these "stable" films give satisfactory size-holding performance in a wide variety of new semi-critical applications. However, shop temperatures and humidities must still be controlled with "stable" films when extremely precise size-holding or reregister requirements are specified. Dimensional performance of "stable" bases is discussed in terms of base characteristics and the thermal and humidity coefficients that can be used in the field to define required shop controls or predict film size changes with uncontrolled conditions.

RECIPROCITY FAILURE IN ORTHOCHROMATIC LITHO FILMS. Raymond Alfaya. TAGA 1956, Part A, pp. 69-74 (6 pages). Reciprocity failure is shown to be a most significant factor in the exposure of orthochromatic litho films. An experimental method is described for measuring the variation of emulsion speed as a function of exposure time using sensitometric exposures made in a process camera. Response curves are given for typical films used in the trade. Considerable change in speed relationship is noted among the various materials as exposure time is increased from 7.3 to 480 seconds. The implications for line and halftone photography are discussed in terms of the exposure times required, with other exposure conditions identical, to produce the same practical result on films which differ in their reciprocity behavior.

A COLOUR CORRECTION SCANNER. Gordon S. Allen. TAGA 1956, Part A, pp. 29-36 (8 pages). The problem of colour correction is discussed in terms of a number of important requirements, which the design of an optimum Colour Scanner should aim to fulfill. The basic units of which any Colour Scanner is composed are stated, along with some reasons for a particular choice. The performance and operating principles of the Crosfield Colour Scanner are then described. This Scanner is an all electronic system, employing a single scanning source for both colour analysis and image re-synthesis. A single cathode ray tube scans a colour transparency, and produces a set of four, colour and tone corrected, separation negatives at final printing size, i.e., by enlarging or reducing in the scanning process. The same principle is used to scan a set of three uncorrected separation negatives, and produce a set of four, tone and colour corrected separation positives.

THE COLORIMETRIC EFFECT OF THE SELECTION OF PRINTING INKS AND PHOTOGRAPHIC FILTERS ON THE QUALITY OF MULTICOLOR REPRODUCTIONS. H. E. J. Neugebauer. TAGA 1956, Part A, pp. 15-28 (14 pages). The colorimetric conditions to be imposed on the inks and color filters for process printing

are (1) that the color gamut defined by the primaries must be as large as possible without omitting any important shades; (2) and that the filters must satisfy the Matching Condition and the Luther-Ives Condition. The Matching Condition concerns the relationship between inks and corresponding filters; the Luther-Ives Condition concerns the shape of the filter curves which must be adapted to the sensitivities of the human eye (color mixture curves). Both conditions cannot be satisfied at the same time. The Matching Condition is of special importance for the reproduction of saturated colors. It can be satisfied approximately by filters that are complimentary to the corresponding inks. The Luther-Ives Condition is of special importance for the reproduction of unsaturated colors. The theory of a quality factor of filters allows one to determine such filters whose deviations from the Luther-Ives Condition are a minimum. They satisfy, at the same time, the Matching Condition if the most suitable set of inks is used. These results hold true irrespective of whether the separations are corrected by hand or by masks. If electronic color correctors are used the Matching Condition is obviated and the Luther-Ives Condition can be satisfied rigorously. The problems, then, lie in completely different directions.

*PHOTOGRAPHIC METHOD OF TONAL SCALE COMPENSATION. U. S. Patent 2,737,457 (Application Nov. 22, 1952). Clyde Childress (Assignor of one-half to Jerome Flax). Official Gazette 704, No. 1, March 6, 1956, p. 149. The method of making photographic negatives having tonal compensated printing characteristics with increased contrast in the areas of maximum and minimum exposure comprising exposing a monochromatic negative film to produce a latent image, developing said negative in a dye coupled developer to produce a complete silver image and a dye image, said developer containing only sufficient dye coupler to produce a dye image which has its maximum contrast in the area corresponding to the toe of the curve of the developed silver

image and thereafter progressively loses contrast, said development being continued to develop substantially all of the silver image, fixing and rinsing said negative and then reducing the silver image in the low density areas of said negative with a selective reducer to remove the silver in the area corresponding to the toe area of the curve of the developed dye image and to leave a silver image of increased printing contrast in the high density areas of the original silver image, said combined developed dye and reduced silver images having a density curve with increased printing contrast in the shadow and highlight areas of the curve.

*COLOR SEPARATION APPARATUS. U. S. Patent 2,740,323. Paul F. Borth, Joseph J. Peterka and Chas. E. Wilson, Jr. (Assigned to R. R. Donnelley & Sons Company). Official Gazette 705, No. 1, April 3, 1956, p. 61. Apparatus for supporting a mask in a camera comprising a register plate having an aperture therein, means for securing the register plate in fixed position in the camera, a mask holder having a substantially rectangular aperture therein, a pair of guide channels at the bottom of the aperture in the mask holder, a stop at one side of the last mentioned aperture, resilient means at the top of the last mentioned aperture whereby one edge of a mask may be inserted in said channels and moved against said stop and held in the fixed position so determined by said resilient means, fixed interengaging indices on the register plate and mask holder to guide the mask holder to a predetermined position over said aperture on the register plate, and a pair of roller shutters one on the register plate and operable from outside of the camera to cover the backside of said plate and one on the mask holder and operable from the backside of the register plate to cover the front side of said holder.

*COLOR CORRECTION SYSTEMS. U. S. Patent 2,740,828 (Application December 29, 1951). Harold E. Haynes (Assigned to Radio Corp. of America). Official Gazette 705, No. 1, April 3, 1956, p. 181. In a system for obtaining color corrected negatives from color separation positives, a first scanning cathode ray tube having vertical and horizontal beam deflecting coils, means to simultaneously apply light output from said first tube to corresponding areas on each of said color separation positives, means to convert the light passing through each of said color separation positives into electrical signals, means to compute and apply color corrections to said electrical signals to obtain color corrected signals corresponding to each of the primary colors, a second exposing cathode ray tube having vertical and horizontal deflection coils, means to control said second cathode ray tube beam intensity with said color corrected signals corresponding to one of the primary colors, means to connect said first and second tube horizontal deflection coils in series, means to connect said first and second tube vertical deflection coils in series, means to apply deflection currents to said series connected horizontal deflection coils and to said series connected vertical deflection coils, a single source of accelerating potentials, and means to apply accelerating voltages to said first and second cathode ray tube from said single potential source.

PLANOGRAPHIC PRINTING PROCESSES

CHEMICAL GRAINING. P. H. Margulies. Modern Lithography 24, No. 5, May, 1956, pp. 38, 39, 155 (3 pages). The article describes baths and procedures for chemically graining zinc plates. Typical bath contains hydrogen peroxide and sulfuric acid. Trays or tanks can be used and it is claimed, there is no plate size limitation. (The baths and procedures do not appear to be any different from those tried by the Becco representative at the LTF lab in 1954.) No mention is made of difficulties, especially in regard to removing plates

after graining and prior to rinsing - i.e., "flashing". We found that the reaction was exothermic and usually required cooling. In platemaking they used a very strong ammonia solution - 10 oz. per gallon of water - to develop the plates. If no changes have been made since LTF tested this method of chemically graining plates, the method seems to have little merit.

ELECTROLYTIC GRAINING. Modern Lithographer & Offset Printer, Vol. Ll, No. 12, Dec. 1955, p. 21-22 (2 pages). Describes electrolytic graining as "electrically controlled chemical graining, where - by means of an electric current carefully supplied to the surface of the plate in the presence of certain chemicals - the speed and character of the reaction can be regulated." Can grain only aluminum. No formula or procedure given.

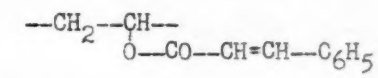
A MODIFIED CASEIN COATING FOR 300 LINE SCREEN REPRODUCTION ON SMOOTH GRAINED LITHO PLATES. William H. Martin. TAGA 1956, Part A, pp. 109-115 (7 pages). A commercial brand of lithographic casein is modified by reacting it with glyoxal and by the addition of a solubilizing agent - guanidine carbonate. This coating is mixed with water and ammonium chromate is added as a sensitizing material. The coating is diluted with water to 2°-3° Baumé and is coated on pumice grained metal plates. To meet the specifications of the sponsor* the ingredients of the coating must withstand a temperature of 70°C. for five days and print a 300 line screen for a minimum of 10,000 impressions.

*Research program performed under Government Contracts.

*METHOD OF COPPERIZING ALUMINUM AND ALUMINUM ALLOYS. U. S. Patent 2,737,463 (Application April 19, 1952). Ledra M. Lawton and Stuart T. Rose (To General Motors Corp.). Official Gazette 704, No. 1, March 6, 1956, p. 150. A method of applying a copper coating to a base metal having a surface composed at least preponderantly of aluminum comprising coating said base with a slurry of cuprous chloride suspended in rosin plasticized with a terphenyl type compound,

thereafter heating said base and slurry thereon for a time and at a temperature sufficient to volatize excess plasticizer and thereby dry the slurry on said base and then heating the base and dried coating at a higher temperature than the drying temperature and for a time sufficient to form a copper coating on said base.

*LIGHT-SENSITIVE PHOTOMECHANICAL RESIST COMPOSITIONS. U. S. Patent 2,739,892 (Application December 30, 1953). Joseph J. Murray and Gerhard W. Leubner (Assigned to Eastman Kodak Co.). Official Gazette 704, No. 4, March 27, 1956, p. 802. A light-sensitive photomechanical resist composition comprising a mixture of a polymer containing approximately 100 mol per cent of recurring vinyl cinnamate units having the formula



and from about 1 to 50 per cent by weight based on said polymer, of a second polymer containing from about 55 to 75 mol per cent of said recurring units and from about 45 to 25 mol per cent of recurring vinyl alcohol units.

*GRAINING MACHINE. U. S. Patent 2,739,423 (Application June 24, 1954). Charles Zarkin. Official Gazette 704, No. 4, March 27, 1956, p. 680. A plate graining machine comprising a main supporting frame, a tub carrying frame mounted for circulatory movement on the main frame, a diamond frame beneath said tub carrying frame confined to longitudinal sliding movement on the main frame, upwardly faced, transversely aligned guide channels on opposite sides of the diamond frame, rigid mounting flanges on the tub carrying frame having openings therethrough over said guide channels, supporting plates removably secured on said mounting flanges and having fixed positioning collars located in said openings and studs dependent from the tub carrying frame slidingly operable in said transversely aligned guide channels, said studs comprising bolts projecting down through said supporting plates and positioning collars, and rollers on the lower ends of said bolts disposed in said guide channels.

*PLANOGRAPHIC PRINTING PLATE AND TREATMENT THEREOF. U. S. Patent 2,741,981 (Application November 19, 1951). Frederick H. Frost (Assigned to S. D. Warren Co.). Official Gazette 705, No. 3, April 17, 1956, p. 515. Process for improving a planographic printing surface on a paper base, said surface comprising a reducing organic material, which comprises uniformly wetting said surface with an aqueous solution of a water-soluble permanganate, said solution being substantially free of non-volatile organic film-forming material, and drying said surface.

*STABILIZED DICHROMATED POLYVINYL ALCOHOL COATING MATERIAL. U. S. Patent 2,742,358 (Application August 3, 1953). Clarence A. Brown (Assigned to Jones Graphic Products Co.). Official Gazette 705, No. 3, April 17, 1956, p. 610. A light-sensitive coating composition which consists essentially of at least 76 per cent polyvinyl alcohol, from 2 to 12 per cent dichromate sensitizer and from 2 to 12 per cent phenol.

PAPER AND INK

PROBLEMS IN MEASURING THE QUALITY OF BLACK SOLID PRINTS. J. M. Fetsko, W. C. Walker and A. C. Zettlemoyer. TAGA 1956, Part A, pp. 129-138 (10 pages). The numerical evaluation of print quality is vital to the study of printability, whether it be of inks or papers. Print quality is defined as the aggregate effect of the various appearance characteristics of printed matter. The most readily evaluated type of print, the black solid, has been the subject of the initial printability studies at Lehigh. The quality of a black solid print depends primarily on its average diffuse reflectance or color density, average specular reflectance or gloss, and uniformity of both color density and gloss. Several instruments for measuring these properties are available, but this work shows that an instrument chosen at random may not produce meaningful numerical results. The photovolt and the densichron were used for measuring diffuse

reflectance. Investigations of the differences between these two instruments involved comparisons with a goniophotometer and experiments with standard lighting and viewing conditions for rating prints visually. The initial studies indicated that the goniophotometer and the Densichron correlated best with visual rating performed under diffuse 45° lighting and perpendicular viewing, and the Photovolt correlated best with visual rating performed with perpendicular lighting and 45° viewing. Gloss measurements were made at 60° with the glosshead of the Photovolt, at 70° with the "Vanceometer," and at 45° with the goniophotometer. The three instruments rated the prints studied in the same order, but this correlation is not expected with all other series of prints. The importance of the uniformity of solid prints makes its numerical measurement imperative. A study of the Buchdahl, Bekk, and Hunter uniformity tests resulted in the conclusion that none of these were satisfactory. An electronic instrument is being designed to produce an immediate numerical evaluation of uniformity. When the measurement of the quality of the black solid is under control, more complicated prints can be studied intelligently.

CORRELATION OF PAPER TESTS TO TROUBLES IN LITHOGRAPHY. Charles H. Borchers. TAGA 1956, Part A, pp. 101-107 (7 pages). The correlation of laboratory tests to press experience is the principal requirement for evaluation of the properties of paper important to lithography. This paper describes some of the tests used by the Lithographic Technical Foundation when picking and tinting troubles are encountered. Included are some tests which may be new or unfamiliar. Excellent correlation is reported between the LTF Pick Tester and press experience. A new test for tinting caused by paper based on a method by Bitter is also described.

WETTING OF PAPER BY ORGANIC LIQUIDS. D. Tollenaar and P.A.H. Ernst. TAGA 1956, Part A, pp. 37-41 (5 pages). The measurements of contact angles on paper are disturbed by the roughness and the porosity of the surface. The wetting can be studied by measuring the volume or the depth of penetration since they are

proportional to the square root of the cosine of the contact angle. Organic liquids varying in polarity form mineral oils to glycols have the same contact angle. It makes no difference whether the paper is sized or unsized. Since the contact angle of highly polar liquids may be presumed to be zero, the wetting of paper by most organic liquids is almost perfect.

THE RELATIONSHIP BETWEEN PAPER AND LETTERPRESS PRINTING QUALITY. K. L. Strachan. TAGA 1956, Part A, pp. 43-51 (9 pages). The important considerations in judging letterpress printing quality are discussed, and paper properties are related to them.

AN INSTRUMENT FOR SHOWING THE CONTOUR OF PAPER SURFACES. H. H. Hull. TAGA 1956, Part A, pp. 53-62 (10 pages). The Proficorder is an instrument designed to draw an enlarged profile of metal surfaces. It is also useful for drawing the profile of paper surfaces. The instrument uses a probe stylus attached to a differential transformer, and is different from other similar devices using crystals, in that there is no decay factor. It draws a true profile showing irregularities of long wavelength, and also enables the rate of travel of the probe to be reduced so that the finer detail in the paper surface may be indicated. The graphs of contour of paper surfaces obtained by this method show several characteristics associated with printability. Examples demonstrate coating pile, smooth and rough formation and "holes" in the surface. Surfaces of cast coated paper and other printing papers are shown.

INK STANDARDIZATION. Modern Lithographer and Offset Printer, Vol. 11, No. 12, December, 1955, p. 33. To establish ink color standardization PATRA has devised a "weighed shell" technique to enable one to lay down a known weight of ink over a given area of paper. Printing conditions are standardized as closely as possible. It has been found that with some ink, ink film thickness, and paper prints from different presses were not identical. The effect of printing pressure has been studied. Pressure did not seem to have an appreciable

effect on standard prints at a definite film thickness apart from mottling of thick ink films at high pressure.

LITHOGRAPHY - GENERAL

TESTS ON INKING SYSTEMS. Modern Lithographer & Offset Printer, Vol. L1, No. 12, Dec. 1955, p. 32. Experiments have been carried out at PATRA on a model ink distribution system. Some of the conclusions reached so far are (1) ink duct setting is of greatest importance in ink control, (2) as ink viscosity and press speed increase, vibrator efficiency decreases, (3) overall ink flow may be controlled by varying pressure between ink rollers, and (4) ink film thickness transferred from roller to roller decreased as press speed and viscosity increased.

TONE REPRODUCTION RESEARCH. Modern Lithographer & Offset Printer, Vol. L1, No. 12, Dec. 1955, p. 33. A brief report of PATRA's research to improve the quality of tone reproduction in lithography. As an outcome of this work an examination is being made of the variables in platemaking and machine work with the view to defining the best conditions for accurate tone reproduction. (Very brief.)

SUBJECTIVE EVALUATION OF GRAININESS IN LITHOGRAPHIC IMAGES. George W. Jorgensen. TAGA 1956, Part A, pp. 63-67 (5 pages). Subjective evaluations of the graininess of a set of press sheets were made by a group of observers using the Pair-Comparison method. The object of this study was to determine a set of numerical response values which arranged the sheets in their correct order and spacing on a graininess scale. Good agreement was found between the various observers and also to objective granularity values derived from microdensitometer traces. The coefficient of correlation between graininess and granularity values was 0.97.

SURVEY OF LITHOGRAPHIC TROUBLES. Michael H. Bruno. TAGA 1956, Part A, pp. 11-13 (3 pages). An analysis was made of technical inquiries referred to the LTF laboratory over a period of three years. These are tabulated by year and subject. The results show a decrease in inquiries from 630 in 1953, to 570 in 1954, and 453 in 1955. Problems involved in the analysis of plant troubles are also discussed.

HOW ARE WE DOING? - 2 Parts. M. H. Bruno. The National Lithographer 62, No. 11, November 1955, pp. 26, 27, 28 (3 pages). The National Lithographer 62, No. 12, December 1955, pp. 34, 35, 36, 37 (4 pages). Great strides in lithographic quality and production through research are reviewed. These include better halftone methods, color reproduction systems, longer lifed plates and newly designed presses. Part II illustrates measurement control instruments developed by LTF and previews further progress through current research on dampening, color correction and quality factors.

GRAPHIC ARTS - GENERAL

STABILITY OF FLAT BED PRESSES. W. Lenaarts and J. TH. V. Wees. TAGA 1956, Part A, pp. 1-6 (6 pages). A flat letterpress machine only operates correctly when the sheet of paper to be printed and the forme cover the same distance during the same time. This may be controlled with the aid of a slipmeter which shows the difference between the two elements. When measuring it is important not to compress the cylinder covering. Differences in the covered distances may be attributed to: (1) Wrong choice of cylinder covering; (2) Wrong dimensions of such parts as cylinder, bed bearers, cylinder bearers and bed; (3) Insufficient pressure between the bed bearers and cylinder bearers; (4) Differences as a result of bending of the cylinder, bed and frame; (5) Inaccurate height of type. To determine the necessary tension between cylinder bearers and bed bearers it follows that the changes in the distance between these parts, as a result of a larger pressure, are to

be known. For a great number of letterpress machines a quality number has been established. This number shows the force in tons necessary to increase the distance between bed and bed bearers by 0,1 mm. This quality number varies between 0,3 - 4 for a number of machines. The stability (the resistance against deformation) has also been expressed in numbers. The chosen standard is the force in tons necessary to increase the distance between the cylinder and the centre of the bed by 0,1 mm. These numbers vary for the respective machines between 0,2 - 4. The highest stability numbers were found with machines of modern construction. This was also true for the quality numbers.

PRECISE MEASUREMENT OF PRESS REGISTER. F. K. Loomis, R. M. Brink and Malcolm Graham. TAGA 1956, Part A, pp. 7-10 (4 pages). It was found necessary to measure mechanical register between printing units of a new press independent of paper. A system of pick-ups together with an oscilloscope and a Polaroid Land Camera made it possible to isolate mechanical effects from those due to the printing process itself. Use of the system made possible a reduction in mechanical mis-register from $\pm$ .035 to $\pm$ .003 and led to a method of pre-inspecting a press without the necessity of printing. Circuit diagrams, progressive records and installation details are given.

PRINTING OF THREE COLOR PHOSPHOR PATTERNS ON FLAT GLASS BY OFFSET LETTERPRESS. D. L. Collins, J. V. D. Eppes, J. M. Fetsko, C. E. Moore, W. C. Walker and A. C. Zettlemoyer. TAGA 1956, Part A, pp. 117-127 (10 pages). A research program was inaugurated at Lehigh University, under the sponsorship of the Radio Corporation of America, to study and develop the application of mechanical printing methods to the production of high quality three color television screens. The specific problem was to print three individual phosphor patterns, representing the green, blue and red screen components, on a flat glass in conformity with severe registration, light efficiency and uniformity requirements. An offset letterpress process was selected since

the three patterns could be placed successively on the offset blanket with the least likelihood of contamination between the three phosphor inks. A modified single color Vandercook 22-34 Offset Proof Press was used for the development program. The use of conventional ink vehicles was prohibited by the requirement that all components except the phosphor be completely burned off at temperatures not exceeding 425°C. A further limitation was the necessity of avoiding contamination by any material which would poison the phosphor. An ink system containing phosphor dispersed on a roll mill into a methacrylic resin and ester vehicle system produced acceptable screen patterns on coated glass. The process was later adapted to three color printing on a Vandercook 604 Four Color Proof Press.

*ELECTROPHOTOGRAPHY. U. S. Patent 2,741,959 (Application April 10, 1953). John J. Rheinfrank and James M. Chapman (Assigned to The Haloid Co.) Official Gazette 705, No. 3, April 17, 1956, p. 509. In a repetitive electrophotographic process which comprises the steps of sensitizing a photoconducting insulating layer on a conducting backing by charging it with an electrostatic charge of a first polarity, exposing said coating to a light image, developing an image on said coating by depositing a finely divided material thereon, transferring the image so developed, cleaning said coating and repeating the above cycle of operations, the added steps comprising exposing said coating to a source of electrical charge and energizing said source with a potential opposite in polarity to said first polarity, said added steps being performed subsequent to the developing step and prior to the step of sensitizing the coating in repeating the cycle.

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LITHOGRAPHIC ABSTRACTS - OCTOBER, 1956

PHOTOGRAPHY, TONE AND COLOR CORRECTION

CORRECTONE FILM. Frank H. Smith. Modern Lithographer and Offset Printer 52, No. 4, April, 1956, pp. 17, 18, 19 (3 pages). The author discusses a new photographic film Gevaert "Correctone." It has a double coated emulsion. The bottom layer is a slow contrasty emulsion, and the top layer is a faster, less contrasty, ordinary color blind emulsion. This material produces negatives with a highlight boost, which is desirable in photo-copying. The manufacturer recommends a white light and yellow filter exposure. However, the author suggests the use of one filtered exposure.

THREE-COLOR PRINTING - Part I. Stanley Goldsmith. American Printer and Lithographer 137, No. 4, April, 1956, pp. 23, 24 (2 pages). An introduction to the field of 3-color printing. A short history leading up to the present day system. A summary of the essential factors involved in the process.

LIGHT AND THE CAMERA - Part I. John M. Lupo, Jr. Modern Lithography 24, No. 3, March, 1956, pp. 40, 41, 42, 43 (4 pages). The first article in a new series on photography. A practical treatment of some of the properties of light is given as they apply to the field of photography.

*PRODUCTION OF SCREENED PHOTOGRAPHIC IMAGES. U. S. Patent 2,754,208 (Application Dec. 8, 1952). Rudolf Michael, Peter Conrad. Official Gazette 708, No. 2, July 10, 1956, p. 436. A method of producing, from a continuous tone photographic negative having two fixedly positioned edges at an angle to each other, a screened photographic image suitable for use in manufacturing a photo-gravure printing plate of the type specified, which method comprises the steps of (a) positioning in contact with said continuous tone negative a first sensitized transparency having two fixedly positioned edges corresponding to those of said negative and respectively aligned therewith by means of a frame having two mechanical locating elements abutting one of said edges and one such element

abutting the other of said edges of said negative and transparency thus establishing corresponding registration points therefor, illuminating the so positioned negative and transparency to expose said first transparency, and processing said first transparency to produce a continuous tone positive transparency having a positive image completely complemental to that of said negative with reference to the corresponding registration points of the aforesaid edges thereof; (b) placing said continuous tone positive transparency in the first of two conjugate planes on opposite sides of a lens with its position fixed in said conjugate plane by three mechanical locating elements corresponding in position to those referred to in step (a); (c) placing in the second of said conjugate planes a second sensitized transparency having two fixedly positioned edges at an angle to each other located in predetermined positions by means of a frame having two mechanical locating elements abutting one of said edges and a third such element abutting the other of said edges; (d) then with the aid of a light source and said lens projecting an image of said continuous tone positive transparency through a half-tone screen interposed between said conjugate planes to said second transparency, and removing and processing said second transparency to produce a half-tone screened negative transparency; (e) replacing the processed halftone screened negative transparency in said second plane in the same abutting relation referred to in step (c); (f) substituting the continuous tone negative for the continuous tone positive in said first plane in the same abutting relation referred to in step (b); (g) placing a third sensitized surface adjacent one of said negatives on the side thereof remote from said lens, removing the half-tone screen, and (h) with the aid of a light source and said lens projecting an image of the other of said negatives to said third sensitized surface through the negative adjacent thereto.

*PHOTOGRAPHIC TEXT CORRECTION MACHINE. U. S. Patent 2,752,818 (Application June 26, 1952). Paul C. Gehring (Assigned to Fairchild Camera and Instrument Corp.). Official Gazette 708, No. 1, July 3, 1956, pp. 63 and 64. A photographic

printing-composing machine comprising: a plurality of stationary compartments each adapted to receive a copy-subject of substantially the same type size; a camera lens system; a source of illumination for the copy-subjects; a movable optical system including means for selectively refracting light from said source onto a copy-subject in any of said compartments and means for reflecting the image of said subject to said lens system; and a film magazine including means for feeding film to the focal plane of said lens system, said lens system having a focusing ratio adjustable over a wide range to effect reproduction of each copy subject in any of a wide range of type sizes.

*BLACK PRINTERS AND ELECTROOPTICAL METHODS OF MAKING THEM. U. S. Patent 2,748,190 (Application Sept. 15, 1951). John A. C. Yule (Assigned to Eastman Kodak Company). Official Gazette 706, No. 5, May 29, 1956, p. 1226. In an electrooptical color reproduction process having three circuit channels carrying signals respectively proportional to the primary red, green and blue components from a scanned multicolored positive original and carrying in subsequent sections of the channels color corrected signals corresponding positively to said primary components, the method of producing a black printer signal which comprises producing in a fourth channel a signal proportional to the greatest of the color corrected signals and decreasing said greatest signal by a factor inversely proportional to said green and red components.

*ONE DIMENSIONAL UNSHARP MASKING. U. S. Patent 2,744,950 (Application October 5, 1951). Vincent C. Hall and John A. C. Yule (Assigned to Eastman Kodak Co.). Official Gazette 706, No. 2, May 8, 1956, p. 390. In an electronic color correction system, the combination of a subject in color to be scanned, means for scanning said subject with a single beam of light, means for generating a first signal in response to said beam representative of variations in one color of said subject, means for generating a second signal in response to said beam representative of variations in a different color of said subject, means for

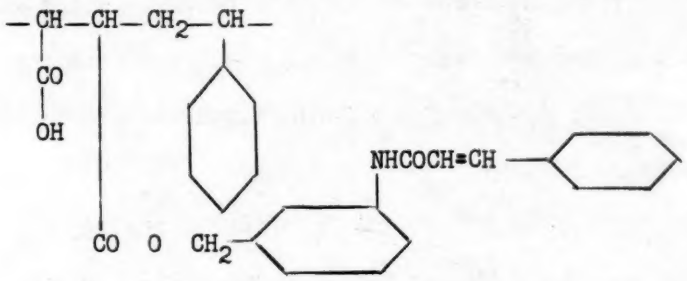
delaying the first signal, means for selectively amplifying the low frequency components of said second signal, and means for modulating the amplitide of the delayed first signal in accordance with the amplitude of the selectively amplified second signal.

*PHOTOGRAPHIC COMPOSING APPARATUS. U. S. Patent 2,744,457 (Application May 8, 1953). Rene A. Higonnet and Louis M. Moyroud (Assigned to Graphic Arts Research Foundation). Official Gazette 706, No. 2, May 8, 1956, p. 271. Photographic type composing apparatus comprising the combination of a support for the characters to be photographed, a continuously rotating mechanism for moving the characters successively through a projection position, an intermittent flash device to illuminate a selected character in said position, projection means to form an image of said character upon a sensitized sheet, and control means for the flash device, said control means including a number of opaque code members, each code member having a plurality of apertures arranged in a circle about a fixed axis and provision for movement about said axis, selector means for moving a combination of said members corresponding to a selected character to form a light path passing through the code members, a light source, means for projecting a beam of light along said axis, continuously rotating reflector means synchronized with said mechanism to rotate said beam continuously about said axis to scan the apertures, whereby said light path admits the beam at a discrete position thereof, reflector means to deflect the admitted beam into said axis, a photoelectric device in said axis to receive the beam, and a circuit for energizing the flash device actuated by said photoelectric device.

PLANOGRAPHIC PRINTING PROCESSES

*LIGHT-SENSITIVE POLYMERS FOR PHOTOMECHANICAL PROCESSES. U. S. Patent 2,751,373 (Application November 25, 1953). Cornelius C. Unruh and Donald A. Smith (Assigned to Eastman Kodak Co.). Official Gazette 707, No. 3, June 19, 1956. p. 786.

A light-sensitive polymer capable of forming a continuous coating on a base and containing recurring units having the structure



*LITHOGRAPHIC PLATE PROCESS. U. S. Patent 2,750,881 (Application August 15, 1952). Chas. F. Geese (Assigned to Steel Dot Corp.). Official Gazette 707, No. 3, June 19, 1956, p. 663. In the process of making a chrome-on-steel lithographic plate whereon an image has been etched on steel, the steps of passivating chrome plated areas of the plate with dilute phosphoric acid, then rendering the etched steel portions of the plate ink receptive by treating said plate with a water-oil-detergent-acidic-metallic chemical blueing solution which evolves hydrogen sulfide on contact with steel, said blueing solution comprising (a) about one part of a mixture of equal parts of kerosene and a hydrocarbon base liquid detergent, and (b) about one part of a solution comprised of approximately 64 ounces of water, 5 ounces of alcohol, 6 ounces of hydrochloric acid, 1 ounce of copper chloride, 2 ounces of sodium hyposulfite and 1 ounce of bismuth chloride, next treating the plate with a dilute solution of phosphoric acid, and then applying rub-in ink to the plate while the plate is still moist.

*LIGHT SENSITIVE COMPOSITION OF MATTER AND PHOTOGRAPHIC PROCESS. U. S. Patent 2,754,210 (Application July 16, 1953). Stanley B. Elliott (Assigned to Ferro Corp.). Official Gazette 708, No. 2, July 10, 1956, p. 437. Composition of matter comprising an intimate admixture of: (A) A material selected from the class consisting of hydroxyl and amino free unsaturated cyclic 1,4 diketones, alkyl substituted hydroxyl and amino free unsaturated cyclic 1,4 diketones and halogen substituted hydroxyl and amino free unsaturated cyclic 1,4 diketones;

(B) A polymeric alkenyl chloride having at least 10 carbon atoms with at least one chlorine on every other carbon atom; and (C) A material selected from the class consisting of the metal oxides, metal salts of weak inorganic acids and metal salts of carboxylic acids, the metals therein being selected from the class consisting of aluminum, iron, antimony, zinc, tin, titanium, zirconium, beryllium, cadmium, and bismuth.

*LIGHT-SENSITIVE PARA QUINONE DIAZIDES FOR MAKING PRINTING PLATES. U. S. Patent 2,754,209 (Application June 10, 1952). Maximilian Paul Schmidt and Oskar Sus (Assigned to Azoplate Corp.). Official Gazette 708, No. 2, July 10, 1956, pp. 436-437. An article for use in the manufacture of printing plates comprising a base and a light-sensitive layer coated on said base adapted to being converted into imaged and non-imaged areas, said light-sensitive layer including at least one water insoluble para-quinone-diazide of the group consisting of aryl substituted sulfonamides, aryl substituted sulfo acid esters, aryl substituted carboxylic acid amides of para-benzo-and para-naphthoquinone diazides, and aryl substituted carboxylic acid esters of para-benzoquinone diazides.

*PHOTOGRAPHIC REPRODUCTION PROCESS. U. S. Patent 2,756,143 (Application December 24, 1953). Alexander Murray (Assigned to Eastman Kodak Company). Official Gazette 708, No. 4, July 24, 1956, pp. 938, 939. A photographic reproduction process which comprises exposing to a two-toned subject a supported layer of a light-sensitive organic solvent-soluble material capable of being insolubilized by exposure to light selected from the class consisting of cinnamic acid esters of polyvinyl alcohol and cellulose, benzal-ar-vinylacetophenone polymers, cinnamal-ar-vinylacetophenone polymers, cinnameylated polystyrenes, cinnamic acid esters of hydroxyalkylated cellulose, and cinnamal ketones, thereby insolubilizing the layer only in the region of exposure, moistening the surface of the exposed layer with an organic solvent

for said material, pressing an absorbent receiving surface into contact with the solvent moistened surface and removing the receiving surface from the solvent moistened surface to obtain on the receiving surface, as an image of the subject, a portion of the unexposed areas of the layer.

*PLANOGRAPHIC PRINTING PLATE. U. S. Patent 2,714,066; C. L. Jewett and J. M. Case (Assigned to Minnesota Mining & Mfg. Co.). Off. Gaz. U. S. Pat. Off., vol. 696, no. 4, 26 July 1955, p. 522. Printing Abstracts 10, No. 11, November, 1955, p. 691. A presensitized, dimensionally stable plate suitable for lithographic printing and related uses, and capable of being shipped in light-proof packages, stored and then used weeks or months after manufacture is claimed. An aluminum sheet has on at least one surface thereof a permanently hydrophilic scum-preventing and tone-reducing film formed by reacting an aqueous solution of a soluble silicate with the surface of the aluminum sheet, the film overlying and being firmly bonded to the surface of the sheet and being substantially free of water-soluble material. The film is such that it will cause an in situ insolubilized diazo image strongly to adhere to the surface of the sheet. The film is coated with a thin coating of a light-sensitive diazo resin, the light-sensitive material being characterized in that, upon exposure of the plate to ultra-violet light through a stencil or negative, it will react in the exposed portions, expelling nitrogen from the molecule and forming a water-insoluble hydrophobic and organophilic material which is tightly bonded to the permanently hydrophilic film, providing a printing image, the light-sensitive resin material being readily washed away from the unexposed areas, leaving the permanently hydrophilic film bare in these areas. The film also prevents the metal from causing decomposition of the diazo light-sensitive material, thus providing long shelf life for the presensitized plate.

PAPER AND INK

FOUNTAIN DOPE. John D. Payne. New England Printer and Lithographer 19, No. 5, June, 1956, pp. 20-22 (2 pages). This article is an introduction to a discussion of litho inks in articles to follow. A glossary of twenty ink terms is given.

*ODOR FROM PRINTING INK - NOTES FOR GUIDANCE. British Carton Association, London. The Association, May, 1955. 11 p.; Paper Box Bag Maker, Oct., 1955: 200, 202; Brit. Packer 17, No. 11: 856, 865 (Nov., 1955); Bulletin of the Institute of Paper Chemistry 26, No. 5, January, 1956, p. 386. This is an interim report published by the association on behalf of eight British associations which appointed a subcommittee to make recommendations for the elimination of odor from printing ink used on packaging materials. The report begins with a statement of elementary principles, then covers the four major printing processes (flexographic, photogravure, letterpress, and offset lithography), as well as varnishes; directions for minimizing odor troubles in each case are given. Since the report is confined to odor from printing inks, little is said about contamination from other materials used, such as film, paper, or board, although reference is made in the case of offset lithography to the fact that the influence of the paper stock is more critical in this process than in the others. Mechanical or chemical deodorization could be helpful in certain instances; however, the best means of obtaining print with a minimum of odor is observation of the given recommendations. The use of ozone is not considered of much assistance in dealing with odor arising on a printed surface. With regard to pending government regulations, it would be a mistake to make the production of a non-odorfree package an offense, particularly since printing inks are nontoxic. Proposed future work is outlined. An appendix is included which describes a method for odor testing of packaging materials.

PROCEDURES FOR PAPER HANDLING (IN TRANSIT). Research and Engineering Council of the Graphic Arts Industry, Inc. Materials Handling Series No. 1. (Pamphlet File:Paper-Miscellaneous II). This report describes the damage to paper in transit and from improper handling or inadequate protective wrapping. The following operations are covered and recommendations given for: 1. Preparation and Inspection of Railroad Cars, 2. Skid Construction, 3. Skid Wrapping, 4. Roll Wrapping, 5. Car Loading of skids, 6. Car loading of rolls, 7. DF Loader, 8. Inspection of Lading at Point of Unloading, 9. Labeling, 10. Core Stripping.

*GLASS PAPER. U. S. Patent 2,728,699. Filed Nov. 23, 1953. Issued Dec. 27, 1955. Dominick Labino. Assigned to L.O.F. Glass Fibers Company. Bulletin of The Institute of Paper Chemistry 26, No. 6, Feb., 1956, p. 500. A method for producing glass paper of improved tensile strength is described. Glass fibers of varying diameters are subjected to a high-temperature, high-velocity gas blast, whereby the primary fibers are blown into submicron-diameter fibers of varying diameters. These fibers are collected into a mat, wetted, pressed, and dried to a paperlike sheet. 8 figures.

*COATED PAPERS; SOME PROBLEMS AND THEIR SOLUTION - Parts 1 and 3. Frederick T. Day. Paper Box Bag Maker, July, 1955: 34-5; Sept., 1955: 132, 136. Bulletin of The Institute of Paper Chemistry 26, No. 4, December, 1955, p. 289. Problems which arise in printing and converting coated papers may be eliminated or minimized by correct paper choice, testing of new paper samples for a particular job, and special regard to the bulk, substance, surface, machine direction and finish (gloss and glare) of the stock. The special problems in printing friction-glazed papers (box flints, litho flints, imitation gelatins, steel blues, and superfriction-glazed papers) are discussed, as well as the difficulties caused by mixing faulty with good papers in the reams. Printing or processing room precautions and paper curl are also considered.

AN APPARATUS OF FOGRA FOR DETERMINING THE DIMENSIONAL STABILITY OF PRINTING PAPERS. Dr. J. Albrecht and W. Ebert. Fogra Mitteilungen 6, September, 1955, pp. 1, 2, 3, (3 pages). (IN GERMAN). A test apparatus built by the German Graphic Arts Research Institute at Munich for measuring papers' dimensional stability is described. It consists of clamps which hold strips of paper. The elongation of the paper due to atmospheric conditions or application of stress is measured by gauges accurate to 1/100 mm.

*MAKING POLYETHYLENE PRINTABLE. Canad. Plast. No. 7, 1955, pp. 42-5, 48; Brit. Plast. Fed. Abstr., Vol. 10, No. 9, Sept., 1955, p. 696; Printing Abstracts 10, No. 12, December, 1955, p. 770. The four methods discussed for rendering the surface of polyethylene receptive to printing are by chlorination of the surface by means of chlorine gas, differential heat treatment, the surface to be printed being heated while keeping the remainder of the material cool, oxidation and electronic treatment.

*INK RECEPTIVITY OF POLYETHYLENE FILM: METHOD FOR MEASURING GLUE ADHESION BETWEEN FILMS IS ADAPTED TO GIVE MORE ACCURATE INDEX OF INK ADHESION. A. F. Chapman. Mod. Packag., Vol. 28, No. 12, Aug., 1955, pp. 117-9. Printing Abstracts 10, No. 11, November, 1955, p. 662. For polyethylene film which has only received a limited amount of treatment to increase its adhesion to inks, this adhesion can be tested by applying a line of an "ink," consisting of 67.5 parts Hypalon (E.I.duPont deNemours & Co.) chemical rubber and 7.5 parts of Polypale (Hercules Powder Co.) resin in 220 parts of secbutyl alcohol, by means of a drawing pen, pressing another strip of film on top of it and measuring the force required to peel the two strips apart on a tensile tester (a Suter tester was used in the tests described). For highly treated films an aniline or photogravure ink can be used. The ink-adhesion test is also applicable to polyester film. Attempts are being made to use this principle to test the ink receptivity of cellulose film.

LITHOGRAPHY - GENERAL

LITHOGRAPHY ON ALUMINUM FOIL. Don Pingree. Pacific Printer, Publisher & Lithographer XCIV, No. 6, June, 1956, pp. 12, 14 (2 pages). This article discusses the improvements that have been made in laminated foils and the handling requirements for successful lithography of aluminum foil. The development of vinyl and nitrocellulose coatings which are better than shellac give better ink receptivity to the foil. Improved lamination with flexibility and water proofness is gotten with latex-casein adhesives. Aluminum foil can now be had in up to 54 inch widths. To decrease curling problems the paper used should be 60 to 80# stock. Since the aluminum is soft and thin (.00035 inch) the paper base must be very smooth to eliminate paper defects showing through the foil. Through the use of special inks, anti-offset spray and small lift piling (1,000 sheets), the need for drying equipment can be eliminated.

*INK-REPELLENT APPLYING METHOD FOR ROTARY LITHOGRAPHIC PRINTING APPARATUS. U. S. Patent 2,753,796 (Application Feb. 10, 1951). Wm. H. Wood and Howard A. Pritchard (Assigned to Harris-Seybold Co.). Official Gazette 708, No. 2, July 10, 1956, p. 331. The method of dampening a lithographic plate mounted upon a rapidly rotating cylindrical support preparatory to inking image areas thereof by contact with inking rollers, transferring the ink to a blanket cylinder and printing therefrom on print receiving material by pressure exerted against an impression cylinder, which method comprises establishing an electrical field of force adjacent said cylindrical support and across the width thereof of substantially uniform effect over adjacent image and non-image areas of said lithographic plate and of limited extent circumferentially of said support, and providing finely divided elements of aqueous lithographic plate dampening material suspended in air in said field, said elements being electrically charged, said field being of such potential gradient as to influence the movement of electrically charged particles suspended in air in said field toward said support while avoiding spark discharge,

said finely divided electrically charged elements being impelled by said field toward said support and onto the surface of said rotating lithographic plate to dampen said plate preparatory to contact thereof with inking rollers.

*OFFSET PRINTING DEVICE. German Patent 929,612. Applicant: Rudolf Muller. Tin-Printer & Box Maker 32, No. 377, June, 1956, p. 6. This patent is an addition to No. 925,116. The cooling of the offset plate surface is automatically adjusted to a temperature lying between 0° and 4° C. The heating of the rubber blanket surface is adjusted to an amount necessary for drying and warming the surface of the color film at room temperature.

*INKING MEANS FOR ROTARY DIRECT PRINTING LITHOGRAPHIC DUPLICATORS. U. S. Patent 2,737,109 (Application April 23, 1951). James W. Hertsch (Assigned to Ditto, Inc.). Official Gazette 704, No. 1, March 6, 1956, p. 60. A direct printing lithographic machine comprising a rotatable segment adapted to carry a printing plate, a freely mounted pressure roll cooperating therewith so as to be engaged and driven by said segment during operation of the latter, an ink form roll and a repellent form roll cooperating with said segment, means for intermittently rotating said segment and for causing it to stop in a home position, said form rolls being located so as to be out of contact with said segment when said segment is stationary in its home position and so as to be engaged and driven by surface contact with a printing plate overlying said segment during operation of the latter for applying ink and repellent to said printing plate, means for setting said ink form roll into rotation at a peripheral speed substantially equal to the peripheral speed of said segment and prior to the time that said ink form roll is engaged by said segment, said last-mentioned means being inoperative during such time that said ink form roll is engaged and being driven by said segment.

RELIEF-PLANOGRAPHIC CONVERSION, Part I. Eldon L. Thompson. Graphic Arts Progress 3, No. 3, May-June, 1956, (2 pages). There are five practical methods

of making conversions from relief to offset: (1) Reproduction Proofs (including transparent proofs), (2) Translucent Proofs, (3) Brightype, (4) Direct-Image Offset, and (5) Double-Offset Transfer. The procedure used in each method is described.

GRAPHIC ARTS - GENERAL

MICROSCOPIC PRINTING RECEIVES PATENT. American Instrument Company, Inc. Laboratory News 13, No. 3, May, 1956, page 9. Twenty-five ordinary newspaper pages can be lithographed onto a 5 by 7 3/8 in. card by means of a process for high-fidelity, microscopic, planographic printing which received patent 2,733,655. The inventor, Albert Boni of Chester, Vt., assigned his rights to the Readex Micro-print Corp. of New York. Using the process, characters made much smaller than has been commercially possible in the past can be printed and will retain their sharpness even when magnified 15 and more diameters. According to the inventor, the microscopically printed characters are made up of accurately superimposed, relatively thin ink layers built up on the printing plate and then impressed upon the sheet by heavy pressure.

NEW GRAVURE-OFFSET PRESS. Gravure 2, No. 1, January, 1956, p. 43 (1 page). This specialty press will print on rough or smooth, thick or thin paper, board, plastic or other materials. A gelatine surface offset cylinder is claimed to give almost total ink transfer from normal intaglio etched gravure cylinders. Future design is toward use of a wrap-around copper plate. The unique feature of the press is the doctor blade cleaning of the gelatine surface after each impression.

XEROGRAPHY - What it is - How it works - How it can save you money. Al DuHadway. Printing Monthly 8, No. 1, April, 1956, p. 4 (1 page). A short description of offset platemaking by Xerography. The process does not require any liquid materials and can produce an offset duplicating master in three minutes. The equipment is easy and economical to operate.

KEEPING MANAGEMENT INFORMED OF REVOLUTIONARY CHANGES IN GRAPHIC ARTS PROCESSES. Kenneth R. Burchard. Management in the Graphic Arts 1955, from Carnegie School of Printing Management, pp. 1 - 12 (12 pages). Trends in Summary - If we try to summarize the trends in our varied branches of graphic arts, we might say (1) there is a distinct effort to get away from metal (or at least heavy metals), with photo or "cold type," magnesium, plastic, and rubber plates; (2) a general movement favoring all the photo processes; (3) a leaning toward the use of presensitized materials and pre-makeready methods--to speed up operations, saving time and high cost of labor; (4) combined processes and machines; (5) a constant delving into the sciences for new and wondrous things which might change our industry picture completely. It must be apparent, however, that management and supervisory people must "keep going to school," in one way or another, to keep abreast of the stream of new developments which will be a continuing threat or challenge, depending upon whether or not the trends have been read aright.

ELECTRONIC APPLICATIONS IN PLATEMAKING. John H. Lord. Management in the Graphic Arts 1955 - from Carnegie School of Printing Management, pp. 27-34 (8 pages). A discussion of photo-electric scanning and its application in the Fairchild Scan-A-Graver and Scan-A-Sizer. Very general.

STANDARDS IN THE GRAPHIC ARTS INDUSTRY - THEIR THEORY AND APPLICATION. Robert E. Rossell. Management in the Graphic Arts 1955, from Carnegie School of Printing Management, pp. 41-53 (13 pages). The value of standardization to industry is described. While other industries have made great strides in standardization the printing industry has lagged behind. The need for more standards is expressed. Graphic arts safety standards, color appraisal standards and quality control standards are described. Automation and other new developments will create a demand for standards which will be achieved through research.

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LITHOGRAPHIC ABSTRACTS - NOVEMBER, 1956

PHOTOGRAPHY, TONE AND COLOR CORRECTION

HIGH-RESOLUTION FLYING-SPOT SCANNER FOR GRAPHIC ARTS COLOR APPLICATIONS. L. Shapiro and H. E. Haynes. RCA Review 27, No. 3, September, 1956. pp. 313-329 (17 pages). There is described a high-resolution, slow-speed scanning and reproducing system developed to serve as input and output devices for an electronic computer which provides color correction in the production of half-tone plates for color printing. In addition to its extremely high resolving power, this system is notable for low image distortion, extreme time stability both geometrically and sensitometrically, uniformity of characteristics in different parts of the field, and precise control of tone rendition. Employing a special 10-inch kinescope, the scanner portion derives input information for the computer by simultaneously scanning three precisely registered color separation plates, requiring 12 min. for a frame scan. Four images representing the required printing ink tone values (cyan, magenta, yellow, and black) are sequentially recorded photographically from a second identical kinescope. Over-all performance is such that on full-page pictures, prevailing requirements in high-quality magazine printing applications are satisfied. This paper deals with the scanner and recorder, and includes a description of the equipment and some of the development problems encountered. The system as a whole, and particularly the computer, has been reported elsewhere.

THE McCORQUODALE-GRESHAM PROCESS FOR COLOR ROTOGRAVURE. Donald Gresham. Gravure 2, No. 6, June, 1956, pp. 19-20 (2 pages). A new "double positive" system is described with important advantages over the Dultgen method. The screen positive being made directly from the retouched tone positive by reversal, incorporates all corrections. Square shadow dots with sides parallel give sharper type. Photo composing time is cut in half.

PHOTOCOMPOSITION DESERVES CAREFUL CONSIDERATION. James V. Elliott The Inland Printer 137, No. 2, May, 1956, pp. 54, 55, 56 (3 pages). The advantages and disadvantages of film and lead typesetting are discussed. Points of interest are working space considerations, efficiency of operation, cost of operation, the supply of skilled help and training skilled personnel. The various photo composers are described.

*FACTORS TO BE CONSIDERED IN CHOOSING A DENSITOMETER. M. J. van Kolmeschate. Groupement pour l'Avancement des Methodes d'analyse Spectrographique des Produits Metallurgiques, 17ieme Congres, Paris, June 23-25, 1954, pp. 475-79. Monthly Abstract Bulletin 41, no. 12, Dec., 1955, p. 711. Characteristics of a satisfactory densitometer are discussed; these factors are determined by the use for which the instrument is designed, i.e., for industrial control or for research. Exact reproducibility of the instrument readings is generally more important than absolute accuracy, since relative densities are often considered adequate. Other topics discussed include: adjustments of the instrument, method of operation, mechanics of maneuvering the sample, the electrical system and its characteristics, requirements of the optical system, and the construction of the instrument.

*GRAININESS AND RESOLVING POWER OF PHOTOGRAPHIC IMAGES. W. Romer. Prehled Foto Filmove Techniky (Czechoslovakia), 4: 117-23, No. 9-10, October, 1951; 5: 1-6, 33-40, Nos. 1-2, 3-4, February, April, 1952; Sci. et inds. phot., (2)24: 191, May, 1953. Monthly Abstract Bulletin 41, no. 12, Dec., 1955, p. 712. Reports are given on the graininess and resolving power of photographic images. The author also discusses the relationship between graininess and granularity which was suggested by Ingarden and Mikusinski (R. S. Ingarden and J. Mikusinski: Prace Wrocl. Towarz. Nauck, 41B:5, 1952, and succeeding abstract).

*THEORETICAL CONSIDERATIONS ON GRANULARITY. R. S. Ingarden and J. Mikusinski. Prace Wrocl. Towarz. Nauck, 41B:5-15, 1952; Bull. Bibliographique Kodak-Pathe', p. 2, No. 629, May 12, 1953. Monthly Abstract Bulletin 41, no. 12, Dec., 1955, p. 712. Statistical considerations of granularity are presented. The authors are in agreement with Jones and Higgins.

*PROBLEMS OF STRUCTURE, AND OPTICAL PROBLEMS INVOLVED IN GRANULARITY. W. Romer. Prace Wrocl. Towarz. Nauck, 41B:29-56, 1952; Bull. Bibliographique Kodak-Pathé, p. 2, No. 629, May 12, 1953. Monthly Abstract Bulletin 41, no. 12, Dec. 1955, p. 712. The article is a discussion of the physical, optical, and physiological aspects involved in measuring graininess.

*THE AREA LAW OF GRANULARITY - THEORETICAL CONSIDERATIONS I and II. R. Debot. Bull. soc. roy. sci. Liege, 23: 79-89, 308-21, February, September-October, 1954. Monthly Abstract Bulletin 41, No. 12, Dec., 1955, p. 712. In Part I, the author presents still another, and simpler, derivation of Selwyn's relation between the variance of fluctuations, σ^2, and the area of the scanning spot, a. He discusses the connection between this relation and the Gaussian or Normal distribution. He then introduces a correction for the finite thickness of emulsions, based on geometrical considerations and assuming a double cone for the path of the illuminating light. For a numerical aperture of 0.25, an emulsion thickness of 10μ, and a scanning diameter of 20μ, the correction for thickness, on these grounds, is of the order of 4 percent. In Part II, the author indicates the modifications needed in the area law when diffraction is taken into consideration. The required correction is asymptotically zero for large apertures but is considerable for small ones. The author discusses next the syzygetic measures of Van Kreveld and of Jones and Higgins, and shows that Selwyn's relation holds for syzygetic granularity if it is assumed that adjacent apertures are independent. He introduces thickness and diffraction corrections for the syzygetic granularity measures.

*THEORETICAL AND PRACTICAL PROBLEMS OF HALF-TONE. E. Stahl. Papir es Nyomdatech., vol. 6, no. 11, Nov., 1954, pp. 337-43 (in Hungarian); Papier u. Druck, vol. 4, no. 7, July, 1955, Druck u. Repro., pp. 103-6; no. 8, Aug., 1955, pp. 118-21 (in German); Printing Abstracts 10, no. 12, Dec., 1955, p. 769. The penumbra theory is outlined. The effect of diffraction in conjunction with screen distance is discussed and formulae for determining screen distance with regard to screen aperture and light wavelength are given. The importance of correct screen distance and the relationship between the "light-collecting" and "light-scattering" distances of a screen are explained. Patterns of illumination through a screen based on the penumbra and the diffraction theories are compared with the pattern produced in practice. A formula for finding the correct lens aperture from the screen aperture, screen distance and degree of enlargement or reduction is given, and a table of lens apertures derived from this formula is reproduced.

HERE'S HOW TO TURN ONE COLOR INTO FOUR. E. J. W. Simmonds. Canadian Printer & Publisher 65, No. 6, June, 1956, pp. 61, 62, 63 (3 pages). Details of a two stop halftone exposure system are described to give four different contrasts and tonal ranges from a single black and white drawing. The addition of local solid color areas and a minimum of dot etching gives "pleasing" color to the example illustrated.

PLANOGRAPHIC PRINTING PROCESSES

A METHOD FOR COMPARING THE RELATIVE LITHOGRAPHIC DENSENSITISING STRENGTHS OF SOME WATER-SOLUBLE MATERIALS. Von R. A. C. Adams. Archiv Fur Druck Und Papier - Archives for Printing, Paper and Kindred Trades 3rd Edition, 1955, p. 275. A split dampening fountain and dampener roller system is described. Various natural and polymeric substances were tested for their desensitizing action as compared to distilled water. Results prove that various solved

agents act very differently. Ammonium or sodium alginate proved to be the most active desensitizers. Organic substances which showed good desensitizing properties were correlated with hydroxyle and carboxyle functional groups and certain spatial disposition in the molecule.

CONTRIBUTIONS TO THE HARDENING OF COLLOIDS BY LIGHT. Von H. Stiehler. Archiv Fur Druck Und Papier - Archives for Printing, Paper & Kindred Trades 3rd Edition, 1955, p. 262 (1 page). The difference in the progress of occlusion-spectra of exposed layer-solvents in comparison with dichromate solvents reduced by arsenical acid was measured. The deviations of the photochemical reaction depend upon a certain trivalent chromium-colloid compound developed by it.

A SIMPLE, INEXPENSIVE AID IN STEP AND REPEAT. The National Lithographer 63, no. 5, May, 1956, pp. 91, 92, 93 (3 pages). A simple and inexpensive device for step and repeat work is described. The device is used to punch holes in a series of strips. One punched strip is fastened to the plate, the others to the negative. A pin through the holes of both strips accurately positions the negative relative to the plate.

PROTECTION OF METAL LITHOGRAPHIC PLATES FROM CORROSION. Henry A. Beechem. Offset-litho Chemistry Questions, Graphic Arts Monthly 27, No. 12, December, 1955, p. 144, 146, 148 (3 pages). Discusses use of chromium compounds for corrosion prevention. Specifically indicates the use of a 2% sodium dichromate treatment (pH 7.5 to 9.5) and Cronaking or Brunaking plates. Suggests that the proper time for treatment is during or immediately following the graining operation.

*DIAZIDO STILBENE DERIVATIVES AS COLLOID HARDENERS. M. K. Reichel and W. Neugebauer Assigned to A. G. Kalle & Co., British Patent 705,842; Photogr. Abstr. vol. 35, part 3, 1955, p. 177. Printing Abstracts 10, No. 12, December, 1955, p. 763. Water-soluble diazido stilbene derivatives, such as

4:4'-diazidostilbene-2:2'-disulphonic acid, replace bichromates as hardening agents for light-sensitive colloids. The light-sensitive emulsion can be coated on a transparent base, e.g., cellulose acetate, and has much improved keeping qualities. The hardeners are incorporated in amounts having a ratio of 1:4 of that of the colloid layer.

*STUDIES, RESEARCH AND INVESTIGATIONS TO DETERMINE THE SPECTRAL SENSITIVITY OF DICHROMATED ALBUMIN. R. W. Koch, D. J. Byers, R. M. Schaffert, and W. T. Reid. PB117345. Final progress report, 1 June 1950 to 29 Feb. 1952, 59 pp., Library of Congress, Publication Board Project, Washington, D. C.; Battelle Tech. Abstr., vol. 4, no. 10, Oct., 1955, p.592A; Printing Abstracts 10, no. 12, Dec., 1955, p. 765. Sensitometric data obtained for films, prepared from sensitized solutions of varying pH values, dried, irradiated, and measured in a specific atmosphere. Methods, materials, and instruments are reviewed, and results are given for initial investigations to evaluate the applicability of the method in determining spectral sensitivity of other photosensitive coating materials.

PAPER AND INK

AIR MOISTURE AND OTHER CAUSES OF MISREGISTER. S. D. Warren Company. Bulletin No. 1 from Series HOW WILL IT PRINT issued by S. D. Warren Company (10 pp). Relative humidity and the effects of humidity change on paper is discussed. Ways of identifying and correcting printing register problems due to humidity changes and faulty press adjustments are described in this bulletin.

SPECKS IN PRINTS. Bulletin No. 2 from Series HOW WILL IT PRINT issued by S. D. Warren Company (12 pp). This bulletin discusses specks in printing and their causes by: (1) Pits in paper or plates; (2) Lumps on paper or plates; (3) Pick; (4) Loose surface dirt; (5) Spray. Numerous illustrations of specks in letterpress and lithographic printing are given. Also Anti-Offset Sprays and their uses are outlined.

HANDLING AND STORING PAPER IN PRINTING PLANT - Part II. William H. Bureau. Printing Equipment Engineer 86, no. 9, June 1956, pp. 70, 74, 128 (3 pages). The control of sheet size is important for multi-color work in single color presses. This article describes the influence of moisture on sheet and roll papers and how to minimize paper stretch by moisture. The use of the LTF-Cambridge Sword Hygroscope for paper is also described.

*PAPER COATING COMPOSITION CONTAINING AN OPTICAL BRIGHTENER. U. S. Patent 2,710,285. Filed Aug. 11, 1951. Issued June 7, 1955. Ralf. B. Trusler. Assigned to The Davies-Young Soap Company. Bulletin of the Institute of Paper Chemistry 25, No. 12, August 1955, p. 1008. The paper-coating composition of this invention provides improved light reflection of paper and printed paper and simultaneously accomplishes a smooth non-tacky finish which may be applied at high speeds to a paper strip as well as to independent sheets (e.g., playing cards). The following steps in the manufacture of the composition are claimed; melting refined carnauba wax (100 parts); adding oleic acid (15 parts) and stirring the mixture which is brought to 100-110°C.; introducing into the heated mixture isopropanolamine (6 parts) diluted in hot water; adding additional water (total amount 900 parts) to dilute the resultant jellylike mass; adding one part of a-benzyl-B-methylumbeliferone (the optical brightening agent); and cooling the product by chilling the outside of the container. The coating is substantive to the cellulose of the paper and the ink on the paper. 1 figure and 7 examples.

*PRODUCTION OF COATED BOARD FOR GLOSS INK PRINTING AND ARTICLE PRODUCED THEREBY. U. S. Patent 2,725,306. Filed April 20, 1953, Issued Nov. 29, 1955. Harry C. Fisher and Stanley W. Trosset, Jr. Assigned to The Gardner Board and Carton Co. Bulletin of The Institute of Paper Chemistry 26, No. 5, January 1956, p. 398. Improved printing quality and imperviousness to gloss vehicles of glossy printing inks is achieved by treating board or paper

first with a thorough plasticization of the surface, increasing somewhat the ratio of adhesive to mineral matter in the coating, and finishing of the product with a thin and uniform application of a water-soluble wax. 2 examples.

*A COMPARISON OF DIFFERENT PRINCIPLES FOR MEASURING AND REGULATING THE MOISTURE CONTENT OF RUNNING WEBS OF PAPER, PULP, ETC. Arne J. Schie. Norsk Skogind. 9, No. 6:211-18 (June, 1955). (In Norwegian; English summary)- Bulletin of the Institute of Paper Chemistry 25, no. 12, August 1955, p. 971. The author discusses five different principles for measuring the moisture content in running paper, pulp, and similar webs; the temperature difference between drying cylinder and paper web, the use of a drier cylinder as a pilot cylinder, and the measurement of the dielectric properties of the web, the moisture content of the air in close vicinity to the web, and the electrical conductivity of the web. 3 tables and 9 figures.

*PICK TEST STUDIES. W. C. Walker and C. E. Moore. Proc. 16th Annu. Forum Packag. Inst., 25-7 Oct. 1954, Part II, pp. 371-7 (Doa. 25.8/16II); Printing Abstracts 10, No. 11, November 1955, p. 669. The Hercules-Brookfield, Waldron, I.G.T. and LTF Pick Testers are considered. No clear-cut evidence is yet available to indicate that one of them is more reliable than the others.

*RHEOLOGICAL CONTROL APPARATUS FOR INKING SYSTEM OF PRINTING PRESS. U. S. Patent 2,707,916. D. Smith and D. Hurley to Interchemical Corp. Off. Gaz. U. S. Pat. Off. Vol. 694, No. 2, May 10, 1955, page 188. The device consists of means for detecting changes in the viscosity of printing ink on one of the rollers of the system, a nozzle directed towards another of the rollers in the system in advance of the first roller and connected with a supply of solvent for printing ink, a valve connecting the supply solvent to the nozzle, and means automatically actuated by detecting means for opening and closing the valve when the detected viscosity changes exceed predetermined amounts.

VARIATIONS AND LIMITATIONS IN COLOR. Emmett Flaherty. The Graphic Arts Monthly 28, no. 4, April, 1956, pp. 82, 84, 86, 88, 90 (5 pages). This article covers the theory of light and color in a simplified manner and then goes on to apply color knowledge to printing inks. Common variations in color met by the inkmaker and printer are due to ink film thickness, roughness of paper stock and absorption characteristics of the paper used. Examples of each variation are described: thick films of ink give depth and appearance of stronger color than thin films, ink on rough surface appears grayer or dirtier than the same ink on a smooth surface, and greater depth of color is apparent when ink is absorbed more deeply into the stock.

LITHOGRAPHY - GENERAL

SOME PHYSICO-CHEMICAL ASPECTS OF LITHOGRAPHY. W. H. Banks. Archiv Fur Druck Und Papier - Archives for Printing, Paper & Kindred Trades, 3rd Edition, 1955, p. 273 (1 page). The nature of the metal surface in aqueous solutions - Electro-potential studies lead to the conception that surface films consist of a mosaic of anodic (either pure metal or such coated with a thin oxide) and cathodic (basic) spheres. A sufficiently high pH value is necessary for etching offset plates in order to gain the requisite basic deposit. The quality of the basic surface film depends on conditions of precipitation. Sensible metal will strive to keep, during the printing process, the pH value of the film with which it is in touch, independently of the pH value of the damping solution. The wettability of metals with oils at the presence of water - From the investigations carried on by Adams about the wettability of metals with oil when immersed into water it is evident that the reactions bringing about the formation of a basic film are very essential for the determination of the lithographical properties of the metal surface. The contact angles conditional upon time, especially when oleic acid drops are concerned, indicate the disturbed balance in the boundary layer

(grenzschicht) and lead to the assumption that oleic acid reacts with the hydroxide film. Besides, the ascertained contact angle relations appear to be a suitable basis for a lithographic series of the metals for the bi-metal system. The sensitization and desensitizing action of dampening solutions - Hereby the presence is necessary of a COOH and an OH group and a corresponding structural relation of these groups to each other. In this process the anion of the densensibilisator intervenes in the cathodic reaction and builds up a basic or complex salt. If at this complex formation an OH group is enclosed, the original acid need not necessarily be more intensive than the fatty acid when the salt formation takes place. It may be safely assumed that this diffusion process of anions replaces the adsorption process, and that the desensibilizing effect depends upon the presence of oleophobic groups. Some considerations on the ink-water-boundary-layer - The formation of emulsions between ink and dampening water may be the reason for many defects. The most detrimental effect of the water is, very likely, the reduced inking. The design of the inking apparatus involves that the flow of ink in the whole trituration system is interfered with on account of the influence of the emulsified water upon the rheological properties of the ink when drops of the dampening water enter the inking apparatus at any point. The ascertained mixing of water drops with the high-grade hydrophilic ink spread upon the cylinder surface when passing the cleft could be explained by the assumption of a considerably smaller dynamical contact angle. Moreover, the content of fatty acid in the ink increases the water moistening quality by the spread of a monolayer on the water. The effects upon the limit of surface-tension with fatty acids can be rather different and high-grade specific if the dampening solution contains electrolytes. The limit of surface-tension of such systems is uncommonly pH-value-sensitive. The pH value, therefore, can be also one of the possible reasons of emulsifying.

*CONTACT ANGLES AND THEIR SIGNIFICANCE IN LITHOGRAPHIC RESEARCH. R. C. Adams. Archiv Fur Druck Und Papier - Archives for Printing, Paper & Kindred Trades 3rd Edition, 1955, p. 280 (1 page). The reaction of a liquid spread upon a solid surface is easily characterized by the value of the contact (marginal) angle. The contact angle of the liquid drop, mostly lenticularly extended, is characterized by the inclination of the lateral tangent of the phase limit solid - liquid - gaseous. Complete moistening and absolute non-moistening are, therefore, characterized by an angle of 0° or 180°. The simultaneous presence of these two phenomena on the offset plate is the essential presupposition for lithographic printing. Examinations of the contact angle are, therefore, the basis for studying the phenomena offered by offset printing. Adams based his contact angle determinations upon the system oil-water-metal surface characteristic for lithographic printing. The contact angle of an oil drop upon a clean metal surface immersed in water was ascertained from the drop-profile of the projection. Measuring values obtained are determined by the surface condition of the solid body in the moment of the test. The system oil-water-oxide film-metal surface is, for instance, exposed to changes by hydration-corrosion-and-adsorption phenomena influencing the physico-chemical conditions of the surface. A suitable means for studying these phenomena was found in the contact angle method. Metal surfaces of vast variety were used for the determinations and the properties of paraffin-and-oleic drops examined. In one series of tests gum arabic was added to the water in order to study the adsorption phenomena. The results permit a deeper cognizance of the lithographic method.

FOUR-COLOR PROCESS ON WEB-FED OFFSET. Reginald F. Wardley. Graphic Arts Monthly 28, no. 4, April, 1956, pp. 120, 122, 124, 126, 128, 130 (6 pages). Web offset is considered a quick and less costly way of entering the long-run color field. Multimetal plates now require only minimum dampening so

the less expensive letterpress machine coated papers are practical. Graduated cylinder pressure, linting, trapping, blanket and heat-set ink problems are discussed.

WEB OFFSET - Part I. A. P. Monroe, Jr. The Graphic Arts Monthly 28, no. 6, June, 1956, pp. 66, 68, 70, 136 (4 pages). Roll-fed printing covers a tremendous scope of machinery, processes and applications. The principal processes are: letterpress, rotogravure, offset, and flexography. This article discusses one web-process exclusively - Offset. This process is not the best or largest in the terms of machines used or value of their products but it is the web process with the widest possible application for the average commercial printer. Various size offset presses are listed together with a description of the type of printing they are used for. There are limitations to web-offset operation but it is the only process that allows the printer to produce both short and long runs of quality reproduction at high speed with combined operations.

*AN INTERNATIONAL MACHINE. Caract., vol. 6, no. 9, Sept. 1955, pp. 105, 107-9, 111-3 (In French). Printing Abstracts 10, No. 11, November, 1955, p. 674. A description is given of some of the features, including the Aller dampening system, of the ten-color web-fed litho machine being built by Marinoni to print the French edition of Reader's Digest. The machine, which has five plate and blanket cylinders arranged round each of the two impression cylinders, resembles that built by Fred'k H. Levey Co. for the same publishers (see Print. Abstr., Aug. 1955, Abstr. no. 1804).

QUALITY CONTROL - Part 5. Charles W. Latham. American Printer & Lithographer 137, No. 3, March, 1956, pp. 34, 39, 40 (3 pages). The application of quality controls in each step in platemaking is stressed. Covered in this discussion are plate grain, counter-etching, coating the plate, exposure and the use of the LTF Sensitivity Guide, and lacquer.

SEEING LIGHT AND COLOR! Frank Preucil. Graphic Arts Monthly 28, no. 4, April, 1956, pp. 68, 70, 72, 74, 76, 78 (6 pages). Errors of visual judgment which can adversely affect graphic arts process steps are described. Refractive errors, retinal sensitivity, mental interpretation and distortions are covered. Illustrations show incorrect perception of size, parallel relationship, double interpretation situations and simultaneous color contrast hue shifts.

GRAPHIC ARTS - GENERAL

*EXPERIENCES IN DRY OFFSET. H. F. Reves. Print. Mag., vol. 79, no. 8, Aug. 1955, pp. 48-9, 51; Printing Abstracts 10, no. 11, November, 1955, p. 696. The experiences of the Speaker-Hines Printing Co., Detroit, in printing periodicals by dry offset, at first in conjunction with letterpress and later by itself, are described. A special etching machine was developed for the thin magnesium plates and an ATF-Mann perfecting press, printing a 38 x 50 in. sheet at speeds of 4,200 sheets p.h., was used.

*INKS FOR CERAMIC BASE PRINTED CIRCUITS. Ceramics, vol. 7, 1955, pp. 26-9; J. Appl. Chem., vol. 5, No. 8, Aug. 1955, col. ii-187: Printing Abstracts 10, No. 11, Nov. 1955, p. 661. Brief general descriptions are given of recipes for inks for the firing-on of coatings of silver, aluminum, antimony, bismuth, bronze, cobalt, copper, gold, indium, lead, nickel, palladium, platinum and tin. Mention is made of the application of rhodium and ruthenium and of the firing process.

*PHOTOGRAPHIC RECORDING IN THE INFRARED REGION BY CZERNY'S METHOD (EVAPOROGRAPHY). H. Gobrecht and W. Weiss. Z. Angew. Physik, 5:207-11, No. 6, 1953. Monthly Abstract Bulletin 41, No. 12, December, 1955, p. 740. The evaporographic method of Czerny consists in projecting an image on a taut, thin collodion membrane, covered on one side by a black absorber, and on the other side with a very thin layer of liquid. The evaporation of the liquid,

due to the temperature variations produced by the absorbed radiation, is observed by the variation of the interference colors of the thin layer. The authors discuss both the practical and the theoretical aspects of the method. A radiant flux of 10^{-9} w. can be detected in an exposure of 5 min. The image projected on the membrane was photographed on Perutz Perulith Film at f/6.3, with an exposure of 30 sec. Some photographs taken by the method are reproduced.

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LITHOGRAPHIC ABSTRACTS

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LITHOGRAPHIC ABSTRACTS - DECEMBER, 1956

PHOTOGRAPHY, TONE AND COLOR CORRECTION

CHOOSING THE f OPENING. John M. Lupo, Jr. Modern Lithography 24, No. 7, July, 1956, pp. 40,41,42 (3 pages). The term f number is defined, and the system of f values explained. The relationship between f settings and camera settings is given. A table of lens setting for different reproduction percentages for line, and halftone work is given. The ratio system for calculating lens openings for halftone work is described.

THE BLACK SEPARATION. Fred C. Kahoun. The National Lithographer 63, No. 4, April, 1956, pp. 34-35 (2 pages). Simple and complex filters and mask systems are discussed to achieve variations in four color black printers. Full exposure, density range suitable for halftoning, and filter selection are emphasized.

THREE-COLOR PRINTING - Part 4. Stanley Goldsmith. American Printer and Lithographer 137, No. 7, July, 1956, pp. 28, 29 (2 pages). The electrical control equipment needed to operate an enlarger for making three-color photographic prints is described. Construction hints are given.

A PRACTICAL APPROACH TO THE LITHO CAMERA - Part 2 - HALFTONES. Marvin Haenze. The Graphic Arts Monthly 28, No. 3, March, 1956, pp. 78,80,82,84,86,88, 104 (7 pages). The reason for using a halftone dot formation instead of continuous tones in printing is given. The two types of halftone screens are described. Methods of using the two screens are given.

"LITH" TYPE EMULSIONS. F. G. S. Cackett. Graphic Arts Focal Point No. 1, December, 1955, pp. 2, 3, 4, and 5 (4 pages). Modern "Lith" emulsions now surpass wet plate contrast and sharpness; but more careful control of lighting, exposure and development is necessary to eliminate after treatments. A numbered gray scale control patch similar to the LTF Sensitivity Guide is recommended for both line and halftone work. Chemical reversal, contact screen application and development techniques are also discussed.

REPORT ON ASTRAFOIL DIMENSIONAL STABILITY. Modern Lithographer and Offset Printer LII, No. 6, June, 1956, p. 23 (1 page). A dimensionally stable plastic sheeting, Astrafoil, is described. Stability data for humidity, temperature changes, and aging are given. Its resistance to solvents and chemicals is given in table form. This material can be used for blue keys, as a base for stripping negatives, or other uses where dimensional stability is important.

*ILLUMINATOR. U. S. Patent 2,760,419 - Application October 30, 1951, Herbert Gelb - Assigned to Joseph Gelb Company. Official Gazette 709, No. 4, August 28, 1956, p. 815. Apparatus for contact printing light-sensitive material through a transparency which comprises a main frame; a printing frame for holding said material and said transparency in contact, said printing frame being pivotally mounted on said main frame for vertical and horizontal positioning respectively for printing and for loading and unloading; a vertically disposed linear light source rollably mounted on said main frame for movement from side to side thereof, said light source being partly shielded by an elongated reflector directing its rays toward said printing frame; a series of baffles mounted on said reflector, said baffles being so disposed as to partition rays of said light source into bundles, with each of said baffles being a sheet of opaque material of relatively minute thickness and of relatively great width for blocking certain slanting rays of said light source and with the plane of each baffle being at an angle other than normal with respect to said light source; and means for moving said light source from side to side of said main frame, said means comprising a motor and a variable speed control therefor; a chain loop connected to said light source and mounted on sprockets at each side of said main frame, said motor driving one of said sprockets; a reversing switch for said motor, and a limit switch at each side of said main frame for stopping said motor when said light source arrives at

either side of said main frame; and including racks extending from side to side of said main frame at the top and the bottom thereof, and pinions mounted on said source and engaging said racks for maintaining said light source in vertical alignment as it is moved from side to side of said main frame.

*PHOTOGRAPHIC COLOR PRINTER. U. S. Patent 2,757,571 - Applied for Sept. 15, 1953. Arthur V. Loughren - Assigned to Hazeltine Research, Inc. Official Gazette 709, No. 1, Aug. 7, 1956, p. 54. A photographic color printer useful in a photographic process having color light-transmission characteristics substantially definable by a plurality of mathematical functions for reproducing on light-sensitive material from one color reproduction of a scene other color reproductions thereof comprising: a source of light of composite color for illuminating the one reproduction to develop therefrom a resultant light of composite color which represents the scene but tends to deviate from a desired representation thereof by a degree determinable by means of the mathematical functions; a computer including electro-optical transducer apparatus responsive to said resultant light for substantially simultaneously developing therefrom a plurality of electrical signals individually representative of different component colors thereof and including a plurality of signal-translating channels individually having signal transfer characteristics determined by individual ones of said mathematical functions for substantially simultaneously translating in individual ones of said channels different ones of said electrical signals and deriving therefrom electrical correction signals representative of the light correction needed in the photographic process to develop the other color reproductions so that they desirably represent the scene; and utilization apparatus coupled to said computer for employing said correction signals to effect such illumination of the light-sensitive material that the other reproductions developed therefrom desirably represent said scene.

COLOUR-MASKING - HOW AND WHY IT WORKS - Part II. F. H. Smith. Graphic Arts Focal Point 2, June, 1956, pp. 10, 11, 12 (3 pages). The incomplete reflections of yellow, magenta and cyan ink patches are diagrammed as they photograph through red, green and blue filters. Positive mask densities which correct these primary errors are then illustrated and discussed.

PLANOGRAPHIC PRINTING PROCESSES

*LITHOGRAPHIC PLATE AND METHOD OF MAKING IT. U. S. Patent 2,760,432 - Application May 6, 1950. William H. Wood - Assigned to Harris-Seybold Co. Official Gazette 709, No. 4, August 28, 1956, p. 819. In a process of the character described, preparing a lithographic plate providing ink-attracting portions and water-attracting portions by vaporizing a metal in vacuum and depositing it on a supporting base having a hydrophobic ink-receptive inert synthetic resin surface, applying a light-sensitive coating to the deposited metal, exposing to light with the subject matter to be reproduced, developing, whereby the surface of the deposited metal is bared between the light-hardened portions of the deposited metal to the synthetic resin surface, removing the light-hardened portions of said developed coating, and de-sensitizing the metal surfaces thus bared. A plate for lithographic printing providing ink-attracting and water-attracting surfaces, comprising a support base having a hydrophobic ink-receptive inert synthetic resin surface, said first-named surfaces consisting of bared portions of said resin surface and said second-named surfaces consisting of intervening portions of metal vacuum-deposited on said synthetic resin surface and rendered hydrophilic by de-sensitizing treatment.

*LIGHT-SENSITIVE MATERIAL FOR PHOTOMECHANICAL PRINTING. U. S. Patent 2,759,820 - Application January 23, 1950. Wilheim Neugebauer and Martha Tomanck - Assigned to Azoplate Corp. Official Gazette 709, No. 3, August 21, 1956, p. 665. Light-sensitive material suitable for the production of

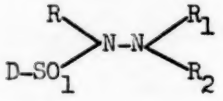
lithographic printing plates comprising a thin aluminum sheet having a slightly roughened surface and a coating consisting of a light-sensitive substance selected from the group consisting of cinnamal-malonic acid, the alkali salts, nitriles, amides and aliphatic esters thereof, cinnamal malonic acid in which azido groups are substituted and cinnamal malonic acid in which nitro groups are substituted coated in a thin uniform layer thereon.

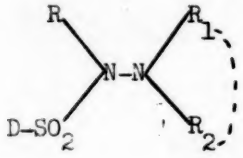
*LIGHT-SENSITIVE MATERIAL FOR LITHOGRAPHIC PRINTING. U. S. Patent 2,767,092 - Application Dec. 3, 1952. Maximilian Paul Schmidt - Assigned to Azoplate Corp. Official Gazette 711, No. 3, October 16, 1956, p. 595. As a new article, a positive working light-sensitive material comprising a base and a light-sensitive layer coated on said base, said light-sensitive layer comprising the water insoluble compound, a naphtho-quinone-(1,2)-diazide-sulfo-acid ester of a cyclohexyl alcohol.

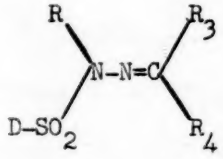
*PLANOGRAPHIC PRINTING PLATE. U. S. Patent 2,766,688 - Application February 24, 1955. Gregory Halpern and Robert Gumbinner - Assigned to Polychrome Corp. Official Gazette 711, No. 3, October 16, 1956, p. 494. A printing plate comprising a dense, flexible base and a coating on said base containing starch carbamate and a filler. A pre-sensitized planographic printing plate comprising a dense, flexible base, a coating on said base containing starch carbamate and superimposed upon the said coating an organic light-sensitive material which becomes water-insoluble and ink-receptive upon exposure to light.

*LIGHT-SENSITIVE MATERIAL FOR THE PHOTO-MECHANICAL REPRODUCTION AND PROCESS FOR THE PRODUCTION OF IMAGES. U. S. Patent 2,766,118 - Application September 30, 1953. Oskar Sus and Maximilian Paul Schmidt - Assigned to Azoplate Corp. Official Gazette 711, No. 2, October 9, 1956, p. 346. An article for use in the manufacture of photosensitive material comprising a base and a light-sensitive layer coated on said base adapted to being converted into imaged and non-imaged areas, said layer including at least

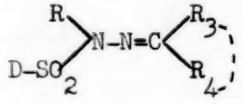
one hydrazine derivative selected from the group consisting of

I. 

II. 

III. 

and

IV. 

wherein

D = an ortho-quinone-diazide radical

R, R_1, R_3 = a member of the group consisting of H and hydrocarbon radicals

R_2 = a member of the group consisting of acyl and aryl

R_4 = a hydrocarbon radical

R_1 and R_2 in Formula II = carbon atoms standing as ring members in the same ring system, and

R_3 and R_4 in Formula IV = carbon atoms standing as ring members in the same ring system.

*MASTERS FOR PLANOGRAPHIC PRINTING. U. S. Patent 2,764,085 - Application January 10, 1952. Clarence J. Shoemaker, Franklin Park, and Margaret A. Griebel - Assigned to A. B. Dick Co. Official Gazette 710, No. 4, September 25, 1956, p. 770. An imaged lithographic plate comprising a base sheet having a continuous surface, a coating on said base sheet having an insolubilized Werner complex compound distributed throughout the coating and in which the acido group coordinated with the trivalent nuclear chromium atom is unsaturated and contains from 1 - 8

carbon atoms and which in the imaged portion has been thermally reacted at a temperature in excess of 350°F. to form a hydrophilic ink-receptive portion in the surface while the unreacted portion of the surface remains hydrophilic in character and water-receptive.

*LITHOGRAPHIC OFFSET PRINTING PROCESS. U. S. Patent 2,763,553 - Application January 21, 1952. Walter Clark and Herbert B. Cowden - Assigned to Eastman Kodak Company. Official Gazette 710, No. 3, September 18, 1956, p. 633. A method for preparing a lithographic printing plate which comprises pressing the hydrophilic surface of a supported layer containing a mixture of hardened gelatin and an inert pigment, against a moistened supported substantially unhardened gelatino-silver halide emulsion layer which has been exposed to a two-tone subject and developed in the presence of a mixture of gelatin tanning and non-tanning silver halide developing agents producing hardened image areas which will not adhere to said hydrophilic surface and other coplanar areas corresponding to the shadows of the subject which adhere to said hydrophilic surface, said emulsion layer being not harder than a gelatin layer containing 0.7 gram of formaldehyde per pound of gelatin freshly coated, mechanically removing the support of said emulsion layer together with the hardened image areas from the hydrophilic surface to leave a stratum of only said coplanar emulsion areas containing gelatin tanning silver halide developing agent adhered to said surface, and then treating said hydrophilic surface with an alkaline solution to develop the silver halide of the adhered stratum and at the same time tan the gelatin thereof with the oxidation products of the developing agent.

*PHOTOGRAPHIC METHOD AND LIGHT-SENSITIVE ARTICLE FOR MAKING PRINTING PLATES. U. S. Patent 2,757,090 - Application August 26, 1952. Wilheim Neugebauer and Martha Tomanck - Assigned to Azoplate Corp. Official Gazette 708, No. 5, July 31, 1956, p. 1178. The method of producing printing plates comprising

the steps of coating a sheet metal base material with a thin uniform layer of an unsaturated aldehyde of the general formula:

$$R - (CR_1 = CR_2)x - CHO$$

in which R is a member selected from the group consisting of heterocyclic radicals, mononuclear aryl radicals and mononuclear aryl radicals substituted by a substituent selected from the group consisting of alkoxy and nitro,

R_1 = hydrogen

R_2 = a member of the group consisting of hydrogen, halogen, alkyl radicals and phenyl.

and x is selected from the group consisting of the whole numbers 1 and 2, exposing the coated base to a light image, treating the exposed surface with dilute acid to remove those areas of the layer not struck by light, and rubbing in the image with greasy ink.

PAPER AND INK

*BEHAVIOR OF INK AND PAPER DURING THE PRINTING PROCESS. Gerard Martin. Papeterie 77, 601, et seq. (1955); Chemical Abstracts 50, No. 10, May 25, 1956, 7456c. An extensive resume which includes the following: a general discussion on porosity and penetration, surface properties of paper, sizing and its effects on the absorption of liquids, surface coatings and their effect on printing, particle sepn. from inks by liquid penetration into paper, printing on letter and offset presses, distribution and transference of ink, rheological properties of inks, quick-set, heat-set, steam-set, and cold-set inks used on rotary letter presses, inks used on photogravure presses, and inks (such as gloss inks and drying-oil-base inks) used when sheets are fed into letter presses.

A COMPARATIVE STUDY OF FOUR SOFTNESS TESTERS. Christen Yang. TAPPI 39, No. 8, August, 1956, pp. 146 A, 147 A, 148A and 149 A (4 pages). A comparative study of four softness testers is described. The instruments tested were the Clark Softness Tester, The Handle-O-Meter, and two versions of the Peirce Tester. Properties investigated were 1) Correlation between hand feel and test results, 2) Correlation among instruments, 3) Reproducibility, 4) Influence of operators, 5) Time requirement for measurement.

*A NEW MOISTURE METER. H. Gaegauf. Textil-Rundschau 11, No. 7:409-18 (July, 1956-German); Bulletin of The Institute of Paper Chemistry 27, No. 1, September, 1956, p. 34. After a review of the causes, variables, and effects of dimensional changes of paper and other materials under different humidity and moisture conditions, the author describes a new apparatus and principle of measuring a material's moisture content. The instrument comprises a flat plate, on which the sample is placed, and a small chamber placed with its open end over the sample. After a short time interval, the equilibrium R. H. in the chamber, which is taken as a criterion of the sample's moisture content, is measured electronically with a new hygrometer element. Constructional details, accuracy, and practical applications of the moisture meter are discussed. 1 table, 10 figures, and 7 references.

NOTES ON SURFACE APPLICATIONS FOR PAPER AND PAPERBOARD MANUFACTURE. James R. Wellman. TAPPI 39, No. 8, August, 1956, p. 141 A and 142A (2 pages). There are on the market many materials to be applied to paper and paperboard for improvement of the surface. Wax emulsions can be applied to the surface by several methods. They may be applied in the size press or on the calender stacks, they can be sprayed on, and they can be used as a coating. American Cyanamid Co. offers some 25 different Alwax and Waxine sizes that are acid stable, alkaline stable, or stable to both acid and alkali; combinations of wax and rosin; and combinations of wax with other materials for specific

applications. Parez resins of both the melamine-formaldehyde and urea-formaldehyde types are also used in surface treatment. These may be used alone to impart wet strength or in conjunction with starch or protein coatings in order to waterproof the finish. Cyron chemical size is used to improve resistance to ink and water. It may be used with starches and is compatible with carboxymethyl cellulose and wax emulsions. Cynol 751 is a rewetting agent designed to increase the absorbency and rewetting characteristics of finished paper. Cynol 760 is a softening agent that increases the softness and absorbency of tissue and saturating papers.

THE APPLICATION OF ALGIN IN PAPER AND BOARD MANUFACTURE. A. L. Magnuson. TAPPI 39, No. 8, August, 1956, pp. 142 A and 143 A (2 pages). Derived from the giant kelp that grows along the southern California coast line the alginates are water-soluble derivatives of alginic acid, a hydrophilic colloidal polymer of anhydro-B-D-mannuronic acid units. The alginates are remarkably efficient as film formers. They have outstanding ability as suspending agents. Algins are excellent emulsifiers and stabilizers, producing highly stable emulsions of waxes, resins, latices, etc. The alginates have outstanding ability to absorb great quantities of water to build solutions of high viscosity at low use levels. Advantages gained by using alginates are: (1) Improved finish and smoothness, (2) Improved and more uniform surface for all types of printing, (3) Uniform high-density development, (4) Greater wax, oil, varnish, lacquer and solvent hold-out, (5) Improved lactic acid resistance, (6) Scuff resistance, (7) Blood serum and water resistance, (8) Grease resistance, (9) Imprived pigment suspension for calender and size press coating, (10) Anti-skid sizing and (11) Exceptional operating properties.

LITHOGRAPHY - GENERAL

*ROTARY LITHOGRAPHIC PLATE DAMPENING MEANS AND METHOD. U. S. Patent 2,761,382 - Application April 11, 1956. William H. Wood and Howard A. Pritchard - Assigned to Harris-Seybold Company. Official Gazette 710, No. 1, September 4, 1956, p. 67. The method of dampening a lithographic plate mounted upon a rapidly rotating cylindrical support and contacted by roller means turning at the same surface speed as said cylindrical support for supplying dampening fluid and ink to said plate, the ink from said plate being transferred to a blanket cylinder and being printed by the latter cylinder on print receiving material by pressure exerted against an impression cylinder, which method comprises establishing an electrical field of force adjacent said roller means and extending throughout the effective length thereof and of limited extent in the direction transverse to the length of said roller means, and providing finely divided elements of aqueous lithographic plate dampening material suspended in air in said field, said elements being electrically charged, said field being of such potential gradient as to influence the movement of electrically charged particles suspended in air in said field toward said roller means and onto the surface thereof and being conveyed thereby to the surface of said rotating lithographic plate to apply dampening fluid to adjacent image and non-image areas of said lithographic plate whereby said non-image areas are maintained in ink repellent condition. In mechanism for applying ink repellent material to a plate on the plate cylinder of a rotary lithographic printing machine, a roll parallel to the plate cylinder, means for grounding said roll, means for creating a fog of aqueous ink repellent material in a narrow field adjacent said roll throughout the length thereof, an elongated electrode parallel to said roll and to the length of said field, and means for applying a relatively high electrical potential to said electrode, whereby the fine constituents of said fog are impelled toward

and onto the said grounded roll, said mechanism being adapted to transfer onto the plate of said plate cylinder the ink repellent material received by said grounded roll.

ALUMINUM FOIL AND REQUIREMENTS OF INKS FOR OFFSET FOIL PRINTING. Donald Pingree and P. T. Pope. American Ink Maker 34, No. 8, August, 1956, pp. 30, 31, 32, 67 (4 pages). Today lithographers are realizing the importance of Aluminum Foil printing. Factors contributing to foil are advancement of manufacturing and surface treatments. The development of vinyl and nitrocellulose coatings have aided in ink receptivity. Several problems are: in paper lamination, curl; in inks, heat drying, hardness and scratch resistance; and in printing, offsetting, and trapping.

AIR CONDITIONING FOR MORE PRODUCTION. J. R. Lewis. The National Lithographer 63, No. 6, June, 1956, pp. 52, 54 (2 pages). The meaning of relative humidity and its change with temperature is reviewed. The necessity for and economics of a choice of humidification, de-humidification or complete conditioning for litho plants is discussed.

THE CHROMATICITY DIAGRAM. John Pince. The National Lithographer 63, No. 6, June, 1956, pp. 14, 16, 18, 22 (4 pages). A description is given of the chromaticity diagram, its construction and use as related to color printing.

*BLANKET CLAMPS. U. S. Patent 2,764,936 - Application May 29, 1953. Thomas H. Johnson and Anthony J. Mueller - Assigned to Harris-Seybold Co. Official Gazette 711, No. 1, October 2, 1956, p. 49. In combination, a blanket cylinder having first and second chordal slots intersecting inwardly from the surface of the cylinder at an acute angle to each other, said slots having a common opening at the cylinder surface, a slide bar mounted in the first slot, means on the side of the slide bar adjacent the second slot for anchoring one end of the blanket, said slide bar being adapted to be retracted into the cylinder clear of the second slot, a mounting strip in the second slot adapted

to anchor the other end of the blanket, said mounting strip when in blanket anchoring position clearing the first slot, said slide bar having an outer end surface conforming to the curvature of the cylinder, and means for extending it from its said retracted position to bring its outer surface into conformance with the surface of the cylinder, said slide bar when in the latter position closing off said second slot and bringing the two ends of the blanket together, and means for locking said slide bar and mounting strip in operative position.

*SHEET HANDLING MECHANISM AND METHOD FOR MULTI-COLOR PERFECTOR PRESS. U. S. Patent 2,757,610 - Application March 18, 1952. Harold W. Gegenheimer, and Carl O. Siebke - Assigned to Miller Printing Machinery Co. Official Gazette 709, No. 1, Aug. 7, 1956, p. 65. A sheet-fed rotary press which comprises a first printing unit for printing a first impression on a sheet, a second printing unit for printing a second impression on said sheet, a series of three cooperating transfer cylinders connecting said printing units, said transfer cylinders having cam operated grippers operative to carry a sheet printed on the obverse side in the first printing unit successively from said first to said second transfer cylinder and from said second to said third transfer cylinder and selectively to transfer said sheet from said first to said second printing unit with either the obverse side or the reverse side of the sheet presented to said second unit for printing a second impression on said sheet selectively either on the obverse or reverse side of said sheet, and suction heads mounted on said second transfer cylinder for rotation therewith and operative to maintain the trailing portion of a sheet in engagement with said second transfer cylinder while said sheet is being carried on said second transfer cylinder. A method of printing comprising moving a sheet in a predetermined path, printing upon a face of the sheet during such movement, terminating such movement by taking the moving sheet by grippers adjacent its

trailing edge, immediately transferring the sheet from said grippers to other grippers, by the second mentioned grippers moving the sheet away from said path with its originally trailing edge leading and printing upon the opposite face of the sheet during such movement.

*BLEED-PROOF DECALCOMANIA AND METHOD OF MAKING THE SAME. U. S. Patent 2,758,035 - Application Dec. 16, 1953. Carl F. Matthes - Assigned to Meyercord Co. Official Gazette 709, No. 1, August 7, 1956. A bleed-proof decalcomania comprising a transferable design layer, a layer of an adhesive material disposed over one side of said design layer for adhering the design layer to the surface being decorated, a blocking layer interposed between said design layer and said adhesive layer, and a releasable carrier having said layers supported thereon, said blocking layer comprising animal glue and a resinous film-forming material compatible with said glue.

GRAPHIC ARTS - GENERAL

*METHOD OF MAKING BIMETALLIC RELIEF-PRINTING PLATES. U. S. Patent 2,768,076 - Application September 14, 1954. William F. Alexander - Assigned to Claber Bi-Metal Plate Co., Inc. Official Gazette 711, No. 4, October 23, 1956, p. 844. The method of making a relief-printing plate of the type comprising a magnesium metal base plate having a thin zinc skin on its working face and in which the imaged printing surfaces are in relief with respect to non-printing areas, said method comprising the steps of forming a resist image on the surface of the zinc skin; removing portions of the zinc skin free from resist to uncover the underlying magnesium on those portions of the plate that are to comprise the non-printing areas; then supporting the imaged plate in a substantially horizontal plane with the imaged surface of the plate facing downwardly; propelling an etchant upwardly through spray-nozzle means in high pressure, fine continuous liquid streams against the downwardly facing plate and substantially covering the working face of the same, said etchant comprising a soluble aluminum salt and an oxidizing agent having the

property of etching the exposed magnesium base metal and reacting with the latter in the formation of a precipitate insoluble in the etchant which precipitate is deposited on the surface of the plate, said streams having sufficient impact against the face of the plate to prevent accumulation of precipitate on the unimaged flat surfaces of the plate while leaving the precipitate as a resist on the etch-produced side walls delineating the non-printing areas adjacent the imaged printing surfaces; continuing said etchant propelling operation, without interruption to manually apply resist, for sufficient time to etch the plate to printing depth; and finally cleaning the plate of resist remaining thereon.

*METHOD AND APPARATUS FOR REPRODUCING IMAGES. U. S. Patent 2,764,500 - Application October 4, 1951. William C. Huebner - Assigned to The Huebner Company. Official Gazette 710, No. 4, September 25, 1956, p. 871. The process of reproducing instantly and directly on receiving material while stationary a complete image such as letters, numerals, characters, pictures and the like from image copy having a transparent image area and an opaque non-image area and which comprises passing light from a stationary light source through the entire transparent image area of the image copy in the same instant and while the image copy is stationary thereby producing light rays in the configuration of the entire transparent image area; projecting all of said light rays onto a stationary target having an extended planular surface containing a multiplicity of separate but closely grouped light responsive electron emitting devices thereby eliminating an area of said planular surface corresponding to the entire transparent image area of the image copy, energizing the devices located in the illuminated area, energizing electrical circuits connected to said energized devices and having uniform atmospheric gaps therein, and producing simultaneously a plurality of separate electrostatic fields of force across the atmospheric gaps; and passing a cloud of reproducing material

through said fields of force transversely to the lines of force thereby depositing the reproducing material on receiving material stationarily located in the atmospheric gaps and extending transversely to the lines of force of said fields of force, wherefore the entire transparent image area of the stationary copy is reproduced instantly on the receiving material by the deposited reproducing material.

THE DOW-ETCH PROCESS ON MAGNESIUM. P. Siviter Smith. Graphic Arts Focal Point 2, June, 1956, pp. 18,19,20 (3 pages). The primary advantages of the Dow-Etch Process on Magnesium are length of time - etching time is reduced to between 6 and 12 minutes, single etch with no powdering and shape of the sides of the dot.

*ETCHING. U. S. Patent 2,763,536 - Application May 20, 1953. John A. Easley and Harry E. Swayze - Assigned to the Dow Chemical Co. Official Gazette 710, No. 3, September 18, 1956, p. 630. An etching bath comprising by weight 2 to 14 per cent of HNO_3, a dioctyl sulfo-succinate in a percentage concentration of at least 0.005 of that of the HNO_3 in the bath but not in excess of 0.10 of the percentage of the HNO_3, from 2 to 15 per cent of diethyl benzene, and a water-dispersible thickening agent selected from the group consisting of the water-soluble gums, gelatin, dextrin, and methyl cellulose. In a percentage by weight of the bath amounting to A times the ratio of the per cent of the dioctyl sulfo-succinate to the per cent of the HNO_3 in the bath. A having the following values: between 0.1 and 1 for the water-soluble gums, between 0.002 and 0.015 for gelatin, between 0.0007 and 0.01 for methyl cellulose, and between 3 and 7 for dextrin.

*MAGNETIC PRINTER. U. S. Patent 2,763,204 - Application May 11, 1955. John C. Sims, Jr. - Assigned to Sperry Rand Corp. Official Gazette 710, No. 3, September 18, 1956, p. 544. In a printer, a porous membrane having a coating of magnetizable material thereon, said coating having a pattern of magnetic gradients

thereon representative of information to be reproduced, and a marking fluid, exhibiting magnetic properties, adjacent said membrane whereby said magnetic fluid is selectively inhibited from passing through selected pores in said membrane having high magnetic gradients adjacent thereto.

*ELECTROSTATIC PHOTOGRAPHIC PRINTING. U. S. Patent 2,758,524 - Application Dec. 30, 1953. Meyer L. Sugarman, Jr. to Radio Corp. of America. Official Gazette 709, No. 2, August 14, 1956, p. 316. A method of electrostatic printing comprising first placing a thin layer of developer powder upon the upper surface of a photoconductive insulating layer upon a lower electrode and spaced from an upper electrode, then simultaneously producing a unidirectional electric field between said electrodes and projecting a light image upon said photoconductive insulating layer to charge the developer powder particles lying upon the illuminated areas of the photoconductive insulating layer, attract said charged particles away from said photoconductive insulating layer upon said upper electrode, discharge said charged particles to said photoconductive insulating layer, and maintaining said electric field between said electrodes and said light image upon said photoconductive insulating layer to repeat said charging and discharging steps until the lateral movement accompanying said oscillatory movement deposits the oscillating powder particles in the unilluminated areas of the photoconductive insulating layer leaving a visible powder image on the photoconductive insulating layer.

*ELECTROSTATIC PRINTING. U. S. Patent 2,758,939 - Application Dec. 30, 1953. Meyer L. Sugarman, Jr. assigned to Radio Corp. of America. Official Gazette 709, No. 2, August 14, 1956, p. 422. A method of electrostatic printing comprising projecting a light image upon a layer of a photoconductive insulating developer powder, charging in one polarity the developer powder lying in the illuminated areas of the light image, and then establishing an electric field across said developer powder layer whereby the charged developer powder is attracted away to a region of opposite polarity.

*ELECTROSTATIC PHOTOGRAPHIC PRINTING. U. S. Patent 2,758,525 - Application Dec. 30, 1953. Alexander J. Moncrieff-Yeates - Assigned to Radio Corp. of America. Official Gazette 709, No. 2, August 14, 1956, p. 316. A method of electrostatic printing comprising first placing a thin layer of developer powder upon the upper surface of a photoconductive insulating layer supported upon a lower electrode and spaced from an upper electrode; then simultaneously applying a unidirectional electric field between said electrodes and projecting a light image upon said photoconductive insulating layer to charge the developer powder lying upon the illuminated areas of the photoconductive insulating layer and to attract the charged powder away from the photoconductive insulating layer leaving a first visible powder image thereon.

*METHOD FOR THE PRODUCTION OF ELECTRO-PHOTOGRAPHIC PRINTS. U. S. Patent 2,756,676 - Application May 4, 1953. Frank A. Steinhilper - Assigned to The Haloid Company. Official Gazette 708, No. 5, July 31, 1956, p. 1073. A method for the production of a plurality of electrophotographic prints from an electrostatic latent image comprising forming an electrostatic latent image on the surface of a photoconductive insulating member, depositing powder particles on said member in conformity with the electrostatic latent image to form an image pattern thereon comprising areas of image body and areas of background, said areas of image body comprising loose powder particles adhering to the electrostatic latent image substantially by the electrostatic attraction of said image, partially transferring said image body to a second surface yielding an electrophotographic print on said second surface while leaving the remainder of said image body as a residual image on the photoconductive member, said residual image body comprising the remaining loose powder particles adhering to the surface of the photoconductive insulating member in conformity with the electrostatic latent image following partial transfer of the image body, and thereafter in at least one successive cycle depositing electrostatic charge on said

residual image comprising the remaining loose powder particles and on the photoconductive member, exposing the image pattern bearing photoconductive member to uniform light whereby the electrostatic charge is dissipated in the background areas, depositing additional powder particles on the surface of the photoconductive insulating member by electrostatic deposition on the charge bearing residual loose powder particle image body to form a second image body comprising loose powder particles electrostatically adhering to the surface of the photoconductive insulating member conforming to said electrostatic latent image, said loose powder particles of said second image body comprising said powder particles of said residual image body intermixed with the additionally deposited powder particles and partially transferring said second image body to a second surface to form an electrophotographic print.